The Journal of the
American Medical Association

VOL. XXXIII CHICAGO, ILLINOIS, DECEMBER 16, 1899. No. 25

Address.

ON LATENT INFECTION AND SUBINFECTION, AND ON THE ETIOLOGY OF HEMOCHROMATOSIS AND PERNICIOUS ANEMIA.*

BY J. GEORGE ADAMI, M.A., M.D., F.R.S.E.
PROFESSOR OF PATHOLOGY, M'GILL UNIVERSITY.
MONTREAL, CANADA.

I can remember, as well as though it were yesterday, sitting in the large bacteriologic laboratory at the Institut Pasteur, close upon ten years ago, and hearing Roux, that clearest of lecturers, recount step by step the fascinating story of the discovery of the anthrax bacillus and the elucidation of the etiology of splenic fever—the history, in short, of the establishment of bacteriology as a science directly bearing on disease. More especially there remains vividly impressed upon me the almost paradoxic point which Roux then made, that mistaken facts and incomplete observations accepted as facts may be of temporary benefit and may aid advance. As Roux pointed out, the most clinching argument brought forward by Davaine, in favor of regarding the anthrax bacillus as the active agent in infection, was that if a pregnant sheep or cow died of the disease, the maternal blood, which contained abundant bacilli, was capable of causing the disease in other animals, whereas the blood of the fetus, which he found free from germs, was absolutely harmless, even when inoculated in large quantities. We now know that the fetal blood in infectious diseases is not necessarily free from the germs of those diseases; the fetus may suffer from the same infection as the parent. Davaine himself, and those attempting to repeat his observations, might have obtained different results; nevertheless, in the then state of bacteriologic science, no surer demonstration of the pathogenetic power of the bacilli could well have been adduced. So also at a later date, when pure cultures of the germ had been gained, the observation made by Pasteur—and the French Commission, of which Roux was a member—that if a broth culture be made of the anthrax bacilli and then the bacilli be filtered off and the clear filtrate alone be inoculated into animals, no results accrue, whereas a minute mass of the residual bacilli surely when inoculated leads to fatal disease in susceptible animals, afforded a singularly powerful demonstration that infection is directly due to the presence of bacilli. As you know, further researches have shown that in connection with very many infectious diseases the fluid of growth contains abundant toxins and, when inoculated, is able to set up the symptoms of disease, and, indeed, had Pasteur employed larger quantities of the filtrate of an old culture of the anthrax bacilli, fatal symptoms might have developed, reproducing to some extent those seen in the natural disease. Fortunately the fluid of growth in connection with anthrax contains but a relatively small proportion of such toxic substances. Without two such *apparently convincing* demonstrations as those above mentioned, it is doubtful whether the world would have become prepared to accept so radical an idea as that bacteria are the essential agents in infection.

In studying and recalling the history of modern medicine, or more especially of bacteriology, not a few other examples of a like nature come to mind. Thus, for instance, very shortly after the discovery of the typhoid bacillus, it was pointed out by numerous observers that these bacilli were present in the stools in enormous numbers and forthwith, in order to prevent the contamination of the water-supply, there came into almost universal employment the method of disinfecting the stools so as to prevent the extension of the disease. We now know that these earlier observations on the stools were incorrect: that what were found in them were the then undifferentiated colon bacilli. For later observations have shown how difficult it is to detect typhoid bacilli in the feces and how rare it is to discover them after the first fortnight of the disease. But these later observations have also shown that for a period at least they do escape into the feces. Here again, therefore, mistaken observations led to advance, for it is needless to state that, for the health of the public, nothing can be better than the sedulous disinfection of typhoid excreta.

I do not mean, in quoting these cases, to suggest that imperfect observations and premature deductions are commendable. I do but wish to point out that advance in our profession not infrequently follows imperfect knowledge, and that the imperfect knowledge of a great man and a conscientious worker is oftentimes directly productive of good results. We should always keep in mind, as old Sir James Paget indicates in the introduction to his son's "Life of John Hunter"—indicates, though he does not absolutely state it—that facts are not of necessity truths; while true in themselves, they do not reveal the perfect truth; that our science is based on half truths; that however sure we are at a given moment of the facts on which we base our conclusions and determine our treatment, later and fuller studies may well show that those facts are not the whole facts, those truths not the whole truths, and that, just as we, benefiting from the facts accumulated by our predecessors and adding materially thereto, have widely modified the conclusions formed by them and the treatment which they employed, so later generations with fuller knowledge will surely arrive at theories and treatment widely different from ours. "Experience is fallacious and judgment difficult;" we must be prepared as experience grows, to modify our judgment.

Of the generally accepted and basal postulates on which not only is bacteriology founded, but also on which our appreciation and treatment of infection and infecti-

*Annual Address delivered before the Society of Internal Medicine, Chicago, Nov. 29, 1899.

ous conditions has been developed, it may safely be said that the foremost, that which has been the fundamental in the application of bacteriologic knowledge to surgery and medicine, has been that in health the organism is free from bacteria, that the tissues are sterile and that infection is due to an abnormal entrance of pathogenetic bacteria into the body. It is on this assumption that antiseptic and aseptic surgery have their basis, and from it we start in order to explain infection. We assume that the skin and the mucous surfaces of the body form a natural barrier beyond which, under normal conditions, bacteria do not pass; that the presence of bacteria in the deeper tissues is the exception and not the rule. We are forced to acknowledge that, occasionally, bacteria gain an entrance without there being a recognizable external lesion, and we speak of disease developing under these conditions as *cryptogenic*—this very term indicating an ignorance as to the exact mode of origin of such disease. Yet the generally received opinion is, as I say, that the presence of bacteria, pathogenetic or otherwise, in the blood, the lymph and the tissues generally, is the exception and not the rule. To the physician, as indeed to the bacteriologist in general, the primary factor in infection is the virulence of bacteria. The protective powers of the tissues, while they may be important, are a secondary factor; the former we can measure with fair accuracy; we have no means whereby to determine the latter with any precision. Having this view, we find it difficult to comprehend phenomena such as phagocytosis, which we are forced to admit come into play in infectious conditions. We see that the leucocytes and endothelial cells take up and destroy pathogenetic bacteria, but find it difficult to understand how these cells can assume functions which apparently are so totally new to them. Indeed, this difficulty in comprehending the assumption of phagocytic properties by the cells of the body has been, I firmly believe, the great obstruction to the ready or general acceptance of phagocytosis as a factor in the arrest of disease.

It would be absurd to deny that this postulate—that the tissues normally are sterile—has been most valuable. Without it and the theory derived from it modern medicine—I use the term in its broadest sense—would not and could not be in its present position; for working conditions it has been essential. If not true it must be somewhere near the truth, otherwise facts and observations would not confirm in so great a measure thereunto. But is it the whole truth? Does everything prove that normally the tissues are free from bacteria? Are there conditions only explicable by assuming that bacteria habitually or frequently enter the circulation? If we find that there are, it is of no use to fall back on that weak retort, that the exception proves the rule—a retort weak as in general misconstrued and misapplied. The exceptions prove the rule only in a mathematical sense of testing it. In this sense the exceptions assuredly do prove the rule and this evening I wish to test whether certain facts at our disposal confirm this theory and to determine whether possibly a modification of the postulate is not necessary.

If it does happen that bacteria enter the circulation under ordinary conditions, all will agree that the more frequent regions of entrance are likely to be found, not so much in connection with the denser epithelial surface layers of the body, as in connection with the more delicate mucosæ of the respiratory and alimentary tracts. And it is to the latter of these that I shall more especially confine my attention. In connection with this alimentary tract we have very definite evidence that here bacteria may penetrate the protective barrier of epithelial cells, nay more, that they are constantly being taken into the system.

So long ago as 1882 Schäfer[1] pointed out the possibility that leucocytes played some part in carrying fat from the intestines into the interior of the villi, and the following year Zawarykin[2] laid down that fatty globules only gained their entrance into the lymphatics through this intermediation of the leucocytes. My old master, Heidenhain,[3] while doubting whether the globules which Zawarykin saw in the leucocytes between the epithelial cells were truly fat, could not but agree that leucocytes were to be seen frequently and in considerable numbers between the cells. More recently, A. B. Macallum of Toronto,[4] in studying the absorption of iron by the economy, has published certain very interesting observations. Taking, for example, the lake lizard—*Necturus lateralis*—which had been kept for thirty months without food, and killing such animals eight hours after feeding them with material containing albuminate of iron, he found that on removing and hardening the intestine intact, then cutting sections and treating them for iron, there, actually within the lumen of the intestine, were numerous free leucocytes crowded with granules of iron pigment; others, free from iron, appeared to be passing out between the epithelial cells, others filled with it, were in the same position, while still others were subepithelial. In higher animals he found that after giving iron, the tips of the villi between the epithelial cells showed the same iron-containing leucocytes and, further, they were present in the venules of the villi; and very shortly after feeding animals in this way, either with peptonate or albuminate of iron, many of the leucocytes in the capillaries of the liver and the spleen were found loaded with it. There can be no doubt then, that under certain conditions leucocytes are constantly passing out on to the free surface of the digestive tract and passing back, and such leucocytes, taking up various food stuffs, are able also to take up bacteria. The researches of Ruffer[5] fully prove this. He took the small intestine of healthy rabbits immediately after death, hardened it in absolute alcohol and cutting sections stained them for bacteria. He found leucocytes present on the free surface, others between the epithelial cells of the mucosa, some of which contained microbes, while, in Peyer's patches, the interior of the individual lymph follicles contained enormous numbers of micro-organisms which, according to him, are without exception in the interior of the lymphoid cells of the tissue. In the rabbit's tonsil he found an identical condition of affairs and, according to his studies, the polymorphonuclear leucocytes wandering on to the surface and there taking up fatty and other particles and occasionally bacteria, pass back again into the lymph glandular areas and are there taken up by certain larger cells—the macrophages of Metchnikoff—cells which, according to Mallory, are of endothelial origin. Here, in these larger cells, they and the contained bacteria undergo digestion. A similar state of things has been recently shown to occur in connection with the lungs, in the peribronchial glands.

Thus, then, under certain conditions bacteria pass into the lymphoid glandular tissue of the pharynx, as of the small intestine, and there tend to be destroyed, and these lymph glands of the subepithelial and submucous areas of the alimentary and respiratory system may be regarded as a second line of defense of the organism against bacterial invasion. But these facts show that at least one tissue is not normally sterile, it is, if you like so to regard it, *potentially sterile; the tendency is for entering*

bacteria to be rapidly destroyed. But we can realize conditions under which such destruction is not complete—when, for example, the passage out and the migration and subsequent return of the leucocytes is excessive, or when again the cells of the body are weakened and can not with sufficient rapidity destroy the bacteria, or when again bacteria themselves, happening to be in the intestine, are of peculiar virulence.

We can, however, go beyond the submucous glands. My senior demonstrator, Dr. A. G. Nicholls, has recently made some very interesting observations, which can easily be repeated and confirmed. Killing healthy rabbits, he has immediately stretched the mesentery of the small intestine, rubbed this on either side with a sterile swab, so as to remove the covering endothelium and then stretching the mesentery over a glass slide, has hardened it in formalin and removed it without cutting the intestine, so as to prevent any bacteria contaminating the surface from the intestinal contents. After hardening in this way he has strained with carbol-thionin. A full account of these experiments will be published later; here I need only say that in rabbits which are apparently in perfect health, the mesentery so prepared shows relatively abundant bacteria in various stages of disintegration. Some are in the lymph channels, and it may be in the blood-vessels; others are apparently free in the lymph spaces and others again are in the immediate neighborhood of nuclei which would seem to be those of wandering cells. Nor, as Bizzozero[6] and Ribbert[7] have pointed out, are bacteria absent in the healthy mesenteric gland, and my own observations confirm these statements. Sections of healthy mesenteric glands of man show, in general, definite bacteria undergoing degeneration, and occasionally the number is remarkable. Neisser,[8] it is true, found the mesenteric glands of large animals sterile, but, as I shall have occasion later on to point out, his methods of obtaining cultures can not be considered free from objection; nor, indeed, does the fact that he was unable to gain cultures disprove or tell against the fact that sections of these mesenteric glands show the evident presence of bacteria. Here, as in the submucous glands, the tendency is for those bacteria to show marked signs of degeneration. The function of the gland tissue, in fact, is to destroy these bacteria, but that they are continually passing into the gland there can be no doubt.

My own experiments carry this subject one very considerable step further. It has been abundantly noted by a large number of observers—by Borel,[9] for example, in connection with the tubercle bacillus, and by Werigo[10] in connection with the anthrax bacillus—that within a very few minutes after intravenous inoculation of the bacteria, these are to be found already within the endothelial cells of various organs of the body. Werigo has clearly shown, and Lemaire[11] has confirmed, that the hepatic endothelium is especially active in this matter and that the endothelial cells can be seen to give out fine prolongations to which the bacilli become adherent, and later as the processes contract they become actually intracellular.

In my own studies on the colon bacillus, or more correctly on certain members of the group of colon bacilli, I have been able to carry these observations beyond this point. Under certain conditions of modified growth these colon bacilli present themselves as bipolar organisms. In the stumpy bacterial forms the coloring matter appears to collect itself or to contract into two rounded masses, and in this condition the bacillus looks curiously like a diplococcus with a clear space around it resembling a capsule, which is, however, the colorless body substance of the organism. In the longer forms there may be three or four or more of these little masses, while, occasionally, instead of the two polar bodies, there is only a single rather ovoid mass.

In our studies[12] on intravenous inoculation of definitely long bacillary forms of the colon bacillus, it was interesting to observe that even in a quarter of an hour, many of these had been taken up by the endothelial cells of the liver, and now the longer rods evidently tended to break up into short pieces, and in several cases all that could be seen of them were these small diplococci still staining strongly, but absolutely unlike the original bacillary form which had been inoculated. At a still later period—in from two to four hours—we observed that in the liver cells there appeared an increased number of minute slightly brownish diplococcoid forms, and these increased in numbers so that in rabbits killed twenty-four hours after inoculation, they might be present in very great quantities while at this period not a single bacillus or diplococcoid form was recognizable in the endothelium. Dr. A. G. Nicholls and I were able similarly to recognize an almost identical process occurring in the cells of the tubules of the kidney, more especially in the convoluted ones, though here the brown staining of the coccoid forms was not so marked.

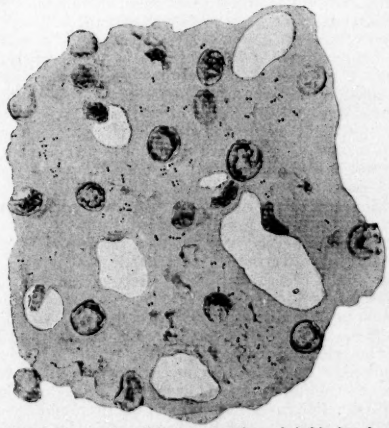


Fig. 1.—From section of liver, stained by carbol thionin, of rabbit dying 16 hours after intravenous inoculation of 0.5 c.cm. of a 48 hour broth culture of a bacillus (B. coli) gained from spleen of case of progressive portal cirrhosis. Drawing made by Zeiss camera lucida, 1/12 in. immersion lens (Winkel), Oc. 4. Sections from liver of rabbit inoculated intravenously with like dose of B. coli from ordinary feces showed identical appearance.

The difficulty in following and recognizing these little bodies is very great; they very soon lose their staining power, but in the liver cell they assume a brownish tinge and thus, if thin sections be taken and treated with weak acetic acid so as to dissolve away much of the protoplasm of the cells and to clear these, the little bodies can be seen without any special staining. They vary considerably in their size, and it would seem that they are in various stages of destruction and dissolution, so that they are apt not to stand out clearly, and unless one studies them carefully and focuses with extreme precision, they appear to be merely small and irregular masses of pigment. But if studied with more care we can recognize a series of forms from those more especially at the outer edge of

the cell, which may still take on a faint stain with carbolthionin and which are of the same size as those observed in the endothelial cells, through still smaller ones only possessing a brown color, until the smallest are only just visible as two minute dots lying in a clear space and recognizable only with the 1/18 inch immersion-lens. Nay more, we at times come across little, clear, vacuolar spaces of an oval shape, with no solid contents, but in size and shape resembling the clear spaces around the minute dots. Even now, although I have been looking at these for many months, it often takes me some minutes before I can resolve the bodies, these pigment granules, into their component parts, for I may add that where they are crowded together and where the section is at all thick, it is practically impossible to recognize their nature. Places have to be selected out where they are more scattered, and then their remarkable double nature and the surrounding fine halo are recognizable. These little bodies vary in size, it is true, but were they indiscriminate pigment granules or particles we would not find as we do that in the pairs the two members should be so remarkably equal; were we dealing with agglomerated independent granules of varying size, it is a mathematical certainty that the particles would not group themselves together in pairs formed of equal parts. This in itself, I can not but take it, is an added proof that we must be dealing with the remains of micro-organisms.

Cohnheim[13] long ago suggested that in the event of bacterial invasion the body protects itself by excreting the living germs through the kidneys and through the liver. But numerous observations, among which must be especially mentioned those of Wyssokowitsch, have thrown very considerable doubt on this theory. Wyssokowitsch,[14] in the course of a very long series of observations carried on with twelve species of bacteria chosen as not causing local lesions in the kidney, was unable in a single instance to gain cultures of the bacteria from the urine, whereas in thirteen out of seventeen experiments, employing species known to be liable to cause local lesions in the kidneys, bacteria passed in smaller or greater numbers into the urine. Sherrington,[15] who gives a very full study of this subject of the escape of bacteria with the secretions, finds that even when every drop of the circulating blood is teeming with organisms there may not be the slightest transit of them into the urine or the bile; nevertheless, when certain pathogenetic species are employed, a considerable number, often very considerable, of the injected bacteria, tend after a time to appear in the secretions of the kidney and the liver, and the escape in the excreta is sometimes accompanied by escape of actual blood. He points out, on the other hand, that sometimes the bacteria are present in the excreta without any detectable presence of blood in the same. He, however, with Wyssokowitsch, concludes that, when this transit occurs, the evidence is against believing that the parts are still normal, although rupture may not have occurred.

It is, however, but right to point out that both older and more recent observers have arrived at different conclusions. Among these may be mentioned: Trambusti and Maffucci,[16] who, in guinea-pigs and rabbits, after injecting the anthrax bacillus, found it both in the bile and urine; Cotton,[17] who found the pyococcus aureus as also the bacillus prodigiosus in the bile thirty minutes after inoculation, and the bacillus pneumoniæ after 4¼ hours; Pernice and Scagliosi,[18] who, after inoculating anthrax into guinea-pigs hypodermically, found the bacilli in the bile in four hours, the bacillus pyocyaneus and the bacillus subtilis in six hours, while in connection with the kidney Posner and Lewin,[19] after injecting the bacillus prodigiosus into the intestines, obtained it both from the kidney substance and from the urine. Biedel and Kraus,[20] after injecting animals with pyococcus aureus, the bacillus coli and the anthrax bacillus, found these in the urine, which was free from albumin and blood, a few minutes after injection. These last observers also made a series of examinations on the secretion through the liver, and introduced a method of placing a canula into the common duct before inoculating the animal, so as to gain the bile which is in the process of being discharged, from the canula, instead of making cultures from the gall-bladder. By this method they gained from the bile the pyococcus aureus which had been inoculated intravenously, in one experiment in thirteen minutes, in another in twenty, and in another in thirty-five.

But some of the most valuable observations on this subject have been made a Chicago worker, Dr. Fütterer.[21] He was able to gain the bacillus prodigiosus from the pelvis of the kidney two minutes after injection into the jugular vein of the dog, while, inoculating animals with the pyococcus aureus and the bacillus prodigiosus and following Biedel and Kraus, he obtained bile from a canula inserted into the common duct and gained abundant cultures of these micro-organisms within two or three minutes after inoculation into the left side of the heart.

Clearly, from the above observations certain bacteria, at least, are actively excreted, as Cohnheim suggested, through the liver and through the bile. In my own experiments after inoculating the bacillus coli, I have at times found only the minute and apparently dead diplococcoid forms in the bile, and the very appearance of these indicates that they have been acted on during their transit through the liver. That appearance is, I take it, an indication of definite secretory activity on the part of the hepatic endothelium and the hepatic parenchyma. But in addition I have found in other cases attenuated, as again well-developed and thoroughly vigorous, colon bacilli in the bile within a few hours after inoculation of a large quantity of these micro-organisms into the peritoneal cavity or into the blood. Sections of the livers of such animals show the changes in the endothelium, as also in the liver cells, already described. Thus I am led to conclude that where the number is not too great, the liver tissue is capable of wholly destroying and digesting the bacteria. Where, however, this function of the liver cells becomes exhausted by the taking up of excessive numbers of the bacteria, then it is possible for the bacteria to be discharged or secreted into the bile in a still living state.

These observations appear to me to clearly demonstrate that while *one of the functions of the lymphatic glands is to take up and destroy bacteria circulating in the lymph, a function of the liver, both as regards its endothelium and its cells, is to take up and destroy such bacteria as are introduced by leucocytes into the venules of the portal system and gain entrance into the portal blood, while similarly a function of the kidney parenchyma, more especially of the convoluted tubules, is to remove bacteria circulating in the systemic circulation.* I have not as yet been able, for lack of time, to fully study the other glandular and excretory organs of the body. I have, however, made individual observations tending to prove to me that other glands possessing excretory ducts, the pancreas and the mammary glands for example, have identical functions. However, I would as yet make no absolute statement concerning these organs.

But if, experimentally, we can thus demonstrate this

remarkable power possessed by the liver and kidney cells, is it likely that these properties are normally in a state of rest and that it is the exception, not the rule, for bacteria to be taken up and destroyed by these cells? As a matter of fact, I have accumulated abundant evidence that this is not the case. In the liver cells of normal animals, of man and the rabbit for instance, these little brownish diplococcoid bodies are normally present. *They form, indeed, the finely granular pigmented material so frequently met with,* and the reason why this has not been recognized earlier is that the pigment has not been examined with sufficient care and with sufficiently high power. I was much interested, for example, to observe in one or two of Dr. Fütterer's photographs,[22] the appearance of these minute diplococcoid bodies, an appearance, I may add, wholly different from the coarser clumps of inspissated bile lying in the first intra and extracellular bile capillaries of the organ. Upon examining a series of sections of forty livers taken in order from as many different autopsies at the Royal Victoria Hospital, I found bodies present in all but three. Out of these forty sections, which were simply labeled with the number of the autopsy, I selected five in which, without there being any sign of cirrhosis or severe disturbance of the organ, these little brown diplococcoids were present in relatively enormous numbers. On studying the autopsy book to see from what cases these came I was greatly impressed by the fact that in every one of these, without exception, there was a history of extensive abdominal inflammation. From such studies we are bound to conclude that normally a certain number of bacteria find their passage into the portal circulation, and, whether already destroyed by leucocytes or still living when taken up by the endothelial cells, they are arrested from entering the general circulation by this agency of the liver, and further, that inflammation of the intestines materially favors this passage.

But now, as against the conclusions above deduced, we have, I must freely confess, numerous careful studies by trustworthy observers, which would appear to establish a view diametrically opposed. Observer after observer has found the blood free from bacteria, even when there is acute infectious disease, nay more, even when, as in typhoid fever, there is an acute inflammation of the intestine. Observer after observer has found the normal tissues, liver, kidney, spleen, and so on, absolutely free from bacteria. Is the conclusion which I have reached founded throughout on erroneous observations; is it possible that the negative results of so many good workers are due to imperfect technic; or lastly, is there a *via media,* and can we discover facts which are capable of reconciling the two opposed series of observations?

ON THE PRESENCE OF BACTERIA IN THE BLOOD.

Let me first consider the case of the blood. Long years ago Lord Lister drew attention to the sterility of the blood, but it was he who, later, made, as I shall shortly point out, the first observations on the cause of this sterility. With that unfortunate aptitude which French and German observers have shown to neglect English and American work, the fact has in general been passed over that Lister made the first careful studies on the bactericidal function of the blood outside the body, and, though we owe the first full studies on the subject to an American, Dr. Nuttall, he, working in a German laboratory, did not there have his attention called to Lister's earlier paper on the subject. From Lister onward it has been the custom to regard normal blood as of necessity absolutely sterile. In 1895, however, Nocard[23] called attention to certain facts showing that this view was not wholly correct. For years Nocard had collected his blood serum aseptically without the employment of heat; in some cases he found that the serum so collected did not "keep" and, looking over these cases, he found that these sera had invariably been collected in the afternoon, after a meal; and so he made a series of observations in which he determined that the serum of fasting animals is nearly always sterile as again, to a less extent, is their chyle; after feeding he discovered that microbes were present in the chyle in considerable numbers, being less where lean food had been taken, while after a meal of fatty foods they formed innumerable colonies. The assumption here is that where fat is taken up into the system from the intestines, along with it, by the same route, bacteria gain an entrance. These observations of Nocard were shortly after confirmed by Porchard and Desoubry[24], who also found that during digestion the chyle of dogs is very rich in microbes, and that these are already less numerous in the heart blood, particularly in that of the left side, as that in the jugular vein they are less numerous than in the carotid artery—an indication that along the course of the circulation the microbes are arrested.

Allied to these results may be mentioned those of Posner and Lewin,[25] who, having tied the rectum in the rabbit, without, however, causing any gross lesion of the mucous membrane, found that within eighteen to twenty-four hours the whole organism, including the heart blood, became infected with intestinal bacteria, and who, in a like manner, conclude that bacteria are capable of invading the whole organism through the intestinal walls, even when there is not the slightest perforation of the intestine.

The above observations of Nocard, it is needless to say, caused considerable interest, though they were received with grave doubt. In Germany, more especially, Max Neisser[26] took up the study. He obtained the mesenteric glands from young cattle and sheep. Taking all precautions against contamination, he made cultures from these and, without exception, save in his earlier observations, in which he alleges poor technic, the glands were found sterile. So also he found that the mesentery with its lymph vessels, from rabbits and guinea-pigs, when placed directly into culture-media, remained absolutely sterile, and from these observations he arrived at the conclusion *that normally by means of the lymph channels, not a single bacterium passes into the circulation either by resorption or by growth.* Further, the same observer, taking a series of fasting and well-fed dogs, to some of which he had given abundant quantities of various pathogenetic and non-pathogenetic bacteria by the mouth, removed the chyle and attempted to gain cultures in gelatin, agar and broth. He found that under all conditions the chyle gave no cultures, or, as he states it, was *absolutely free from germs,* while he concluded from some further observations that normally the chyle is free from any bactericidal powers. Kühnau[27] obtained similar results.

In America, quite recently this subject has been taken up in a long and most thorough investigation by Franklin Warren White of Boston.[28] He attempted to gain cultures in septicemia and other diseases, and, in order to guard against possible contamination, took the blood direct from the veins by means of a sterile syringe under all aseptic precautions. 0.5 c.c. of this blood was forced in each case into eight tubes of agar kept fluid at the bed side at a temperature of 42° C.; then the blood was

thoroughly mixed with the agar.. Two broth tubes were each inoculated with 0.5 c.c. of the blood and those various bloods and tubes so prepared were kept at the body temperature and examined at intervals for several days. The results obtained are rather remarkable: out of 18 cases of septicemia, in 4 only did he gain positive results, specific bacteria being found in the blood during life. Out of 19 of pneumonia, in only 3 were there positive results; in 8 of cerebrospinal meningitis, not a single positive result was obtained, whereas out of 37 of chronic disease (nephritis, tuberculosis, gastric ulcer, myocarditis and pericarditis, etc.), only 5 positive results were obtained. Thus, out of 92 cases altogether, only 12 gave cultures and these in cases of active disease. A remarkable point with regard to these observations of Warren White is that he, like many previous observers, Petruschky, Sittmann, Hewelke, Michaelis, Meyer, Verdelli and yet others, obtained almost entirely, if not entirely, staphylococci, streptococci and pneumococci. The remarkable fact is that whereas bacillary forms are so commonly associated with infection, all these observers with singularly rare exceptions failed to gain bacilli from the blood. This in itself is very suspicious. Warren White did not get the colon bacillus in a single culture, although the colon bacillus was not infrequently found in one or more organs at the autopsy, and, like the other observers, whom he quotes, he can not accept the theory that the normal or nearly normal bowel is easily and frequently penetrated by bacteria.

It is very remarkable that Warren White himself[29] has pointed out that the blood serum even in healthy individuals is not appreciably germicidal for pus organisms* whereas it is markedly germicidal toward the colon bacillus, and he found further that the serum retained this property even in cases of severe chronic disease up to the end of life, and it may be for several hours after death.

Herein lies, it seems to me, the explanation of the whole matter: Those observers who have most frequently gained positive results are just those who have employed broth cultures and have diluted the blood considerably. Nocard and French observers, as I know from personal experience, still favor the method introduced by Pasteur, of using relatively large quantities of broth for making first cultures, in preference to solid media; whereas German observers, as in private duty bound, follow the methods introduced by Koch and work especially by means of streak and plate cultures of solid media.

Because certain observers have failed to discover bacteria in the blood from cases of infectious disease, it by no means follows that the blood when shed has been free from bacteria. One and all of these observers who have gained so large a proportion of negative results have failed to take into account, or to take any measures to diminish the bactericidal action of the shed blood, and our German colleagues, those who have been foremost in dwelling on this bactericidal action and employing it to explain immunity and arrest of disease, have been the greatest sinners in this respect. I need but refer here to the fact long ago clearly demonstrated by Lubarsch, that whereas 1 c.c. of shed blood will kill thousands of anthrax bacilli, a much smaller number of the bacilli introduced into the circulating blood will surely cause the death of a rabbit, i. e., will not be killed in the circulating blood but will proliferate abundantly; or to the abundant further evidence that we possess, that the bactericidal powers of the circulating blood are relatively slight, whereas those of the shed blood are remarkably powerful. In the act of coagulation it is that the bactericidal substances are in the main liberated. If but a few bacteria be in the blood removed from a vessel, and a drop of that be smeared over the surface of agar or blood serum, no wonder that the results are negative. That drop of blood alone is capable after coagulation of destroying hundreds, not to say thousands, of such bacteria as the colon bacillus. Even if, as Warren White proceeded to do, 0.5 c.c. of blood be mixed with 5 to 10 c.c. of agar or other medium, the dilution is too slight to greatly inhibit this bactericidal action. No wonder then that in his series of observations, only those forms, and just those, relatively resistant to the bactericidal action of the blood serum, managed to proliferate and to form colonies.

Thus it happens that those who have employed solid media have had a succession of negative results; those who have freely diluted the blood and the chyle have more often gained positive results. It is not that the bacteria have been of necessity absent from the blood, it is that the proper means were not taken to favor their growth.

What is true of the blood is true also of the bile. Compared with the blood the bile has such slight bactericidal effects that most observers have denied that it has any at all. My own observations show me that it has a slight bactericidal and inhibitory action on the growth of bacteria. Here, as with the chyle, if relatively large numbers of bacteria from a pure culture be added, they grow immediately and abundantly, but if the number be small, they tend to be destroyed. Dr. Maude Abbott, working in my laboratory at the Royal Victoria Hospital, has now repeatedly found that if inoculations of human bile be made simultaneously upon agar or blood serum and into broth, the former tubes may remain sterile, the latter show growth. It is only where relatively abundant bacteria are present that growth occurs on all media. In short, the proper method to test the blood for the existence in it of bacteria, is to take a relatively large quantity of that blood, say about 0.5 c.c.—because no one pretends that in the circulating blood any large number of bacteria is present, and if a small quantity be taken the germs are likely to be missed—and immediately drop that into a Pasteur flask containing 50 or 100 c.c. of broth, shake forthwith so as to distribute the blood through the broth or other fluid culture-media and thereby to dilute it thoroughly. Even with this dilution it is not certain that bacteria present in the blood will grow, but, certainly the growth is distinctly favored as compared with the more common method of the employment of solid media. I do not say that, employing this method, germs are constantly found in the blood; I do say that they tend to grow much more readily.

(To be continued.)

*In this White is in harmony with Nuttall,[30] Stern,[31] and Prudden.[32] Flexner,[33] however, agrees with Rovighi[34] that, normally, human blood serum does possess distinct bactericidal properties for the pyococcus aureus, though this power is absent or diminished in some cases at least of advanced chronic disease. Of nine samples of blood taken from persons suffering from some form of chronic disease, in three only was no appreciable effect exerted on the pyococcus aureus. Flexner found that 1 c.c. of normal blood serum might in four hours kill some 29,000 pyococci, though usually the number destroyed was very much less.

THANKSGIVING day the Boyce annex of the Atlantic City (N. J.) Hospital was dedicated and was formally opened for the receiving of patients. It is the gift of Mrs. Nourse of Absecon, and cost $10,000.

Original Articles.

MENSURATION AND CAPACITY OF THE FEMALE BLADDER.

OBSERVATIONS ON THE FEMALE BLADDER DILATED BY ATMOSPHERIC PRESSURE IN THE KNEE-BREAST POSTURE.

BY GUY L. HUNNER, M.D.

Assistant Resident Gynecologist, Johns Hopkins Hospital.
BALTIMORE, MD.
AND
IRVING P. LYON, M.D.

Former Resident Gynecological Officer, Johns Hopkins Hospital. Baltimore; Clinical Pathologist to the New York State Pathological Laboratory, University of Buffalo; Instructor in Clinical Medicine, University of Buffalo.
BUFFALO, N. Y.

The investigations here reported were undertaken by the writers on the suggestion and with the constant aid and direction of Dr. Howard A. Kelly, of the Johns Hopkins Hospital, to whom they take pleasure in acknowledging their indebtedness.

How little is really known about the bladder is found on a cursory reading of the surgical text-books, containing their meager and contradictory statements. The measurements and capacity of the female bladder given in the text-books have been determined by post-mortem examination, by urine—or other fluid—distension to discomfort, and by other inexact methods that have given imperfect and often contradictory results.

The methods employed by the writers in their investigation differ from those heretofore employed in essential and important respects. 1. All measurements have been made on living women with the bladder either perfectly healthy—most cases—or so slightly disturbed from the normal as not to affect the accuracy of the results. 2. All examinations were made with the women in the knee-breast posture, with the rectum, vagina, and bladder all—with a few exceptions noted in the accompanying table—dilated by atmospheric pressure, produced by simply opening these cavities to the outside air by the insertion of a speculum, by the method so well known from the writings of Kelly.

With all cases thus placed under similar conditions of observation, the chief sources of avoidable error were removed, and relative measurements could be made and certain averages and standards found. It was, of course, impracticable to estimate the variations of intra-abdominal pressure in different cases or to fix upon a standard of this force, but repeated examinations of the capacity of the bladder in the came case showed that this force was nearly uniform. Although this force may be assumed to vary in different cases and thus to influence the capacity of the bladder when it is opened to the entrance of the outside air, still we believe that this variation is far less important than the variation of individual tolerance or irritability to fluid distension, the method previously most generally employed in determining the capacity of the bladder.

It was found also that by this method of dilatation no discomfort[1] was felt by the woman, and consequently no resistance, either voluntary or involuntary, was offered by her, thus adding to the uniformity of the conditions of observation. On the contrary, it was found that distension by fluid to discomfort was subject to the peculiar and varying irritability or tolerance of the subject, and thus gave no uniform basis of comparison.

The work was undertaken primarily to afford to the gynecologist for his guidance some additional information on the size, shape, position, internal mensuration, and capacity of the bladder, and incidentally to furnish the anatomist with some of the same data.

Had the study been made primarily from the anatomic viewpoint, it might have been better to have made the observations on the bladder alone distended, without the distension also of the vagina and rectum. But we have found that while the distended vagina and rectum have a certain influence on the shape and position of the dilated bladder, they seem to influence only slightly its air capacity.[2]

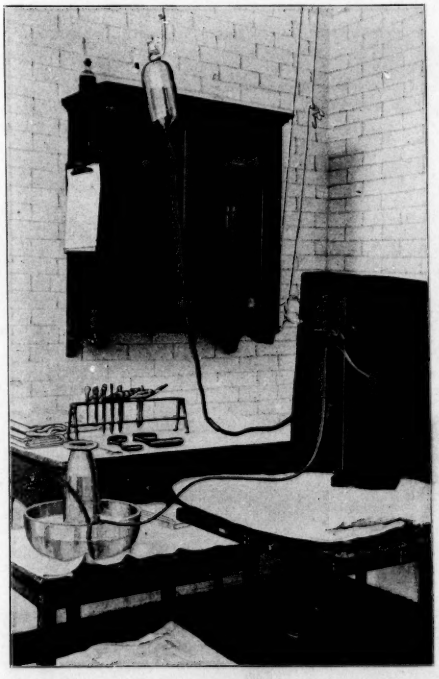


Fig. 1 represents the double-barreled catheter and attachment, and for determining the residual air in the bladder after bimanual expansion.

The chief points investigated were: 1, the average atmospheric distension capacity of the female bladder, 2, its actual internal measurements from the internal urethral orifice to certain chosen points on its walls.

For the purpose of the first study, the woman was put in the knee-breast posture and the three pelvic cavities were each allowed to dilate by natural atmospheric pressure. A closely fitting catheter was then introduced into the bladder, attached at its external end to a long soft rubber tube. The rubber tube was closed by clamp, and the woman was then rotated carefully by assistants from the knee-breast into the dorsal position. The rub-

[1] The patients never complained of discomfort from the distended bladder while in the knee-breast posture. After rotation to the dorsal position, however, they usually felt some slight discomfort, if they were not under anesthesia, and were instructed, before being rotated, to refrain from any expulsive effort.

[2] This last statement needs confirmation, as our observations on this point were few.

ber tube was then introduced into a deep vessel of water and from below upward into an inverted glass, graduated cylinder completely filled with water, and was held pointing upward in this position, by an assistant. The clamp on the tube was then released, and the entire air content of the bladder was expressed by the ordinary gynecologic bimanual method, with one hand exerting pressure on the bladder externally from the abdominal wall and the other pressing at the same time on the bladder from within the vagina or rectum.

The air thus expressed was gathered in the glass cylinder, displacing from above downward an equal amount of water, and the amount was read off on the graduated cylinder, thus determining the exact air capacity of the bladder.

To test whether all the air was thus removed from the bladder a special instrument was devised (Figs. 1 and 2), consisting of a metal catheter, divided by a horizontal septum through its entire length, each compartment of the catheter opening separately at the bladder end of the instrument, and also at the external, here being drawn out into separate round tubes for attachment to rubber tubes. The opening of the upper chamber at the bladder end of the instrument was guarded by a wire cage covering it, and thus protected against injury to the mucous membrane of the bladder by suction, at the same time preventing an entire closure of the exit by the collapsing mucous membrane.

is depressed externally so that its end within the bladder is raised to the anterior—upper—wall of the bladder and is felt against the abdominal wall by the hand placed against it externally.

When the bladder is filled to moderate distension by fluid, and air remaining in it would naturally rise to the highest level and thus find its way out through the upper passage of the catheter, then the clamp on the rubber tube connected with it externally is released. This air is forced out by the pressure of the fluid within the bladder seeking to escape, and is collected and measured.

The amount of air thus obtained ranged from 5 to 30 c.c., averaging about 15 c.c., which was found by measurement to correspond to the air content of the catheter and attached tube. It was thus shown that the total air content of the bladder had in general been completely removed by the previous bimanual expression.

In the twenty-five women examined, the average bladder capacity by atmospheric distension was found to be 303 c.c., individual cases ranging from a minimum of 160 to a maximum of 545 c.c. By reference to the accompanying table it will be seen that the capacity in general follows the general size of the bladder by internal mensuration, and also in a general way the size of the woman. Measurement was also made, in 22 cases, of the fluid content of the bladder, boric solution being used for this purpose. On anesthetized patients the solution was introduced through the double-barreled cathe-

Case.	Age.	Size.	Para.	Bladder.	Pelvic organs.	Anesthesia.	Time in position.	Air in		Urethra.			Mensuration of bladder.					Bladder capacity.	
								Rectum.	Vagina.	Caliber. mm.	Length. cm.	Intern. orifice closes.	Int. orifice of urethra to Vertex. cm.	Pos. wall. cm.	Left lat. wall. cm.	Right lat. wall. cm.		Air. c.c.	Fluid. c.c.
1	19	Large.	O	Normal.	Left cystic ovary.	O	15 m.	+	+	8	3.75	. . . . .	7.00	5.75	7.00	6.00		350	440
2	27	Small.	O	Normal.	Small right ovarian cyst.	Ether.	30 m.	+	+	7	3.50	Hexagonal.	7.00	7.50	6.50	6.50		300	520
3	51	Large.	iii	Normal.	Normal.	Ether.	15 m.	?	?	8	3.30	Quadrangular.	5.00	7.00	5.20	4.80		225	380
4	20	Large.	O	Normal.	Small uterus.	Ether.	30 m.	+	+	8	3.00	. . . . .	7.00	6.50	6.75	6.75		235	
5	53	Large.	ii	Trigonitis.	Normal.	Ether.	15 m.	?	?	7	3.50	Narrow slit.	7.30	5.80	6.00	5.30		380	400
6	36	Small.	iv	Normal.	Relaxed vag. outlet.	Ether.	15 m.	+	+	8	3.20	. . . . .	2.20	2.20	2.80	0.80		230	500
7	29	Large.	O	Normal.	Retroflexio ut. Left salpingitis.	Ether.	15 m.	+	+	. .	4.00	Pentangular.	4.80	1.80	3.80	2.80		160	210
8	18	Medium.	O	Normal.	Normal.	Ether.	15 m.	+	+	7	2.80	. . . . .	10.30	7.80	8.80	6.30		400	400
9	19	Large.	ii	Normal.	Slight double salpingitis.	Ether.	?	?	?	6	3.50	Transversely ellipsoidal.	8.00	6.80	8.00	6.80		275	425
10	17	Large.	O	Normal.	Anteflexio uteri.	O	15 m.	+	+	7	3.00	Triangular.	7.50	6.00	6.80	5.50		220	460
11	48	Large.	Para.	Normal.	Normal.	Ether.	15 m.	?	?	. .	3.00	Pentagonal.	8.30	6.80	7.30	6.00		240	440
12	35	Medium.	O	Normal.	Normal.	Ether.	15 m.	+	+	7	3.50	Circular.	6.80	5.30	6.80	4.80		275	360
13	39	Large.	O	Normal.	Left ovarian adhesion to broad ligament.	Ether.	15 m.	+	+	7	3.50	Pentagonal.	9.20	6.20	8.20	8.70		545	840
14	34	Medium.	Para.	Normal.	Normal.	Ether.	15 m.	+	+	. .	. .	Quadrangular.	7.70	5.70	6.70	5.70		290	400
15	27	Very large.	O	Normal.	Normal.	Ether.	30 m.	+	+	. .	2.75	Triangular.	8.20	6.70	7.20	7.20		400	500
16	19	Small.	O	Normal.	Normal.	Ether.	30 m.	+	+	6.5	3.00	Pentagonal.	8.20	6.20	8.20	6.20		350	600
17	28	Small.	vi	Normal.	Prolapsus uteri.	O	15 m.	+	+	6	4.20	Hexagonal.	7.20	6.20	7.20	7.70		220	300
18	39	Medium.	Para.	Normal.	Suspensio uteri. Salpingitis, o.p.	O	15 m.	+	+	6	3.00	. . . . .	6.20	6.20	6.70	6.20		300	220
19	24	Small.	O	Mild cystitis.	Normal.	O	15 m.	O	+	. .	. .	. . . . .	5.70	5.20	5.90	5.20		240	
20	23	Large.	i	Normal.	Normal.	Ether.	15 m.	?	?	8	. .	Pentagonal.	8.00	7.20	6.70	6.70		520	450
21	52	Large.	vi	Trigonitis.	Normal.	O	15 m.	+	+	. .	. .	Tranverse slit.	7.70	6.20	8.20	7.20		320	480
22	24	Small.	Para.	Normal.	Normal.	Ether.	30 m.	+	+	. .	. .	. . . . .	5.20	3.20	4.20	4.20		200	
23	19	Medium.	O	Mild cystitis.	Normal.	O	15 m.	+	+	. .	. .	. . . . .	7.20	5.40	7.20	7.40		385	460
24	26	Small.	Para.	Acute cystitis.	Retropos. uteri.	O	30 m.	+	+	8	. .	. . . . .	9.20	6.20	7.20	7.20		325	350
25	52	Large.	O	Mild cystitis.	Normal.	Ether.	30 m.	+	+	. .	. .	Circular.	7.70	4.40	8.20	6.20		220	320

After the patient has been rotated from the knee-breast into the dorsal position, this double catheter, its lower chamber having been previously shut off by clamp, is inserted and through its upper chamber the air content of the bladder is collected in the way already described, by bimanual pressure on the bladder.

The rubber tube connecting with the upper chamber is then shut off by clamp, and a sterile boric solution, colored slightly with methylene blue, is passed into the bladder through the lower chamber of the catheter by hydrostatic pressure from outside, the tube connecting with a glass vessel filled with the fluid and raised above the level of the bladder to produce the required hydrostatic pressure to fill it. The catheter, which is curved, ter until overflow through the upper barrel; on those without anesthesia, until discomfort was caused to the woman. The average fluid capacity was thus found to be 429.7 c.c., varying in individual cases from a minimum of 210 to a maximum of 840 c.c. The fluid capacity of the bladder was thus found to be more than one-third greater than the air capacity, a difference that would be expected because of the elasticity of the bladder walls under increased pressure.

With reference to the influence of anesthesia on the capacity, the following table has been arranged:

	Atmospheric capacity.	Fluid capacity.
With anesthesia . . .	306.7 c.c. (av. 17 cases)	449.6 c.c. (av. 15 cases)
Without anesthesia .	295.0 c.c. (av. 8 cases)	387.1 c.c. (av. 7 cases)
	303.0 c.c. (av. 25 cases)	429.7 c.c. (av. 22 cases)

From these figures it is seen that the average capacity of the bladder for both air and fluid is somewhat greater with than without anesthesia, explained, doubtless, by the relaxation of the bladder walls during anesthesia. The above figures tend also to show that this difference is greater with fluid than with atmospheric distension, due to the greater irritability of the bladder, without anesthesia, to fluid distension.

dren was 36, and of the nulliparous women only 26 years.

The second chief object of this study was to gather some statistics on the internal mensuration of the bladder under atmospheric dilatation in the knee-breast posture. The importance of such measurements to the gynecologist is apparent, but they have never before been accurately ascertained.

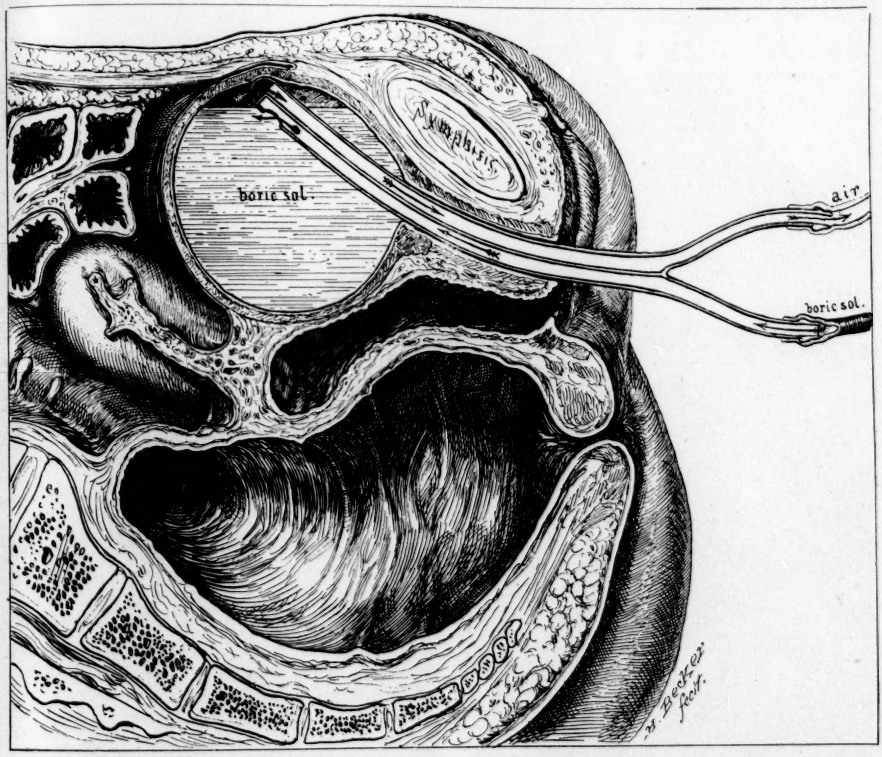


FIG. 2.—Median section, dorsal position, showing the double-barreled catheter in position in the bladder, boric solution entering through the lower chamber and forcing the air out through the upper chamber.

The influence of child-bearing on the capacity of the bladder is shown in the following table:

	Atmospheric capacity.	Fluid capacity.
Nulliparous.	313.8 c.c. (av. 13 cases)	464.5 c.c. (av. 11 cases)
Parous	291.2 c.c. (av. 12 cases)	396.0 c.c. (av. 11 cases)
	303.0 c.c. (av. 25 cases)	429.7 c.c. (av. 22 cases)

The explanation of these figures, showing the greater capacity of the bladder of nulliparæ, is doubtful, and it may be that it is purely accidental, due to the limited number of cases observed. We would suggest, however, that it may be due to the greater elasticity of the bladder of the nullipara, influenced both by her younger average age, and by the fact that her bladder and the surrounding tissues have not suffered injury and undergone sclerotic changes as the result of the pressure of the gravid uterus. The influence of age is shown in the fact that the average age of the women who had borne chil-

The distance of certain points from the internal urethral orifice was measured. The points chosen were: 1. The *vertex*, or summit, the most prominent and distant point in the concavity of the upward and anterior bulging of the ventral wall, usually placed well above the reflexion of the peritoneum and the departure of the urachus. 2. The most prominent and distant point in the upward and dorsal bulging of the *posterior wall*. This point is found a few centimeters above the peritoneal reflexion, and is usually opposite the end of the cystoscope when it is held in the axis of the patient's body. Quite frequently, however, the cystoscope must be directed more posteriorly to bring this point into view. 3. The point of greatest outward bulging in the *left lateral wall*. 4. The point of greatest outward bulging in the *right lateral wall*. These four points are not scientifically fixed points, but in actual work are found to

be sufficiently clearly indicated for practical purposes of identification and description (Fig. 3).

The average measurements obtained for these four points were: to summit, 7.14 cm.; to posterior wall, 5.77 cm.; to left lateral wall, 6.70 cm.; to right lateral wall, 5.92 cm. The individual measurements will be found in the accompanying table.

Taking the measurements separately for nulliparous and for parous women, the averages are found to be:

	Summit.	Posterior wall.	Left lateral wall.	Right lateral wall.
Nulliparous (av. 13 cases)..	7.43 cm.	5.75 cm.	7.03 cm.	6.12 cm.
Parous (av. 12 cases) . . .	6.83 cm.	5.79 cm.	6.35 cm.	5.72 cm.

The greater average internal dimensions of the bladder of nulliparæ, here shown, correspond to the greater capacity for air and fluid, as already pointed out, and may be explained in the same way.

tended rectum tends to displace the bladder toward the left. Our observations on the position of the rectum in women are directly opposed to the usual statements of the text-books of anatomy and surgery. Mr. Max Brödel,[3] artist to the gynecologic department of the Johns Hopkins Hospital, whose observations on the anatomy of the organs of the pelvic cavity have been exact and extensive, informs us that his own experience confirms our observations on this point.

Another factor producing some slight asymmetry of the dilated bladder is the fact that the uterus[4] is usually placed somewhat to the left of the median line and encroaches on the left upper posterior quadrant of the bladder, as is well shown in Fig. 4. The influence of this factor is to lower the point of greatest outward bulging of the left lateral wall, Point 3, so that it is

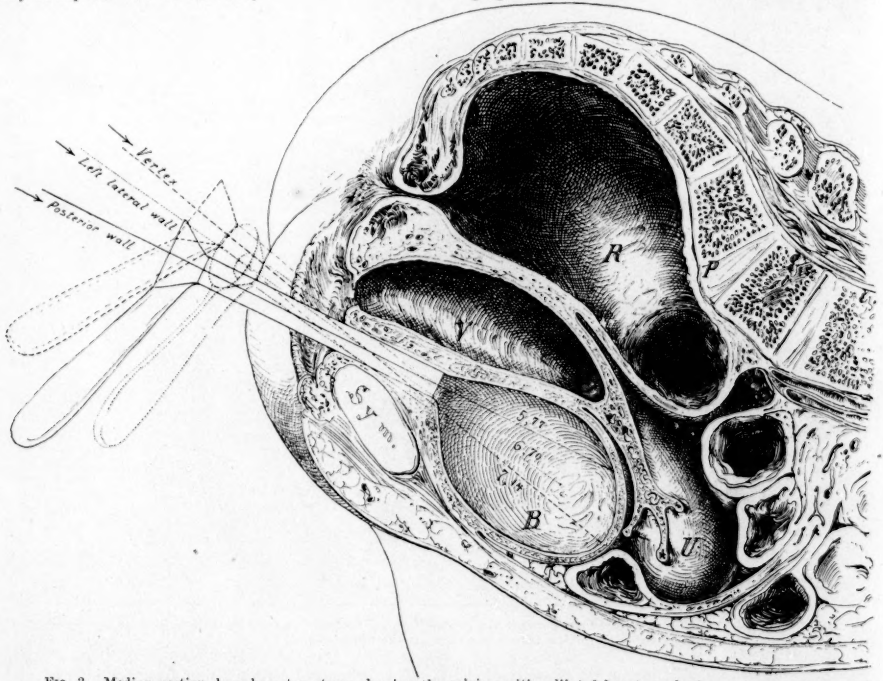


FIG. 3.—Median section, knee-breast posture, showing the pelvic cavities dilated by atmospheric pressure, and the cystoscope in position for obtaining the measurements of the vertex, posterior wall, and left lateral wall.

The *asymmetry* of the dilated bladder, shown by the unequal lateral measurements, is of interest. In sixteen cases the left lateral measurement is greater than the right; the reverse is true in six, and in three the left and right internal lateral measurements are equal. The occasional asymmetric position of the bladder has been noticed by anatomists, but never before has this asymmetry been recorded in so large a proportion of cases. This tendency for the bladder to be placed more to the left than to the right, at least when the patient is in the knee-breast posture with the three pelvic cavities dilated with air, may be explained by the fact that the rectum in women is found much more commonly on the right than on the left within the pelvis, and thus the dis-

found to be at a lower level than Point 4 on the right lateral wall.

It was found that the same patient examined repeatedly by the same method gave, as a rule, nearly uniform measurements, the variations being slight.

All cases were free from any constricting clothing at the time of the examination, and the rectum was emptied by cathartic or enema before the examination.

With the patient in the knee-breast posture, and the rectum, vagina, and bladder all dilated by atmospheric pressure, it was found that the true pelvis was always

[3] To Messrs. Brödel and Becker of the Johns Hopkins Hospital, we wish to express our indebtedness for the beautiful drawings from which Figs. 2, 3 and 4 have been made.

[4] This observation is also opposed to the statements of some text-books of anatomy, and is confirmed by Mr. Brödel.

completely occupied by these three organs, and that the bladder and the uterus tended to rise upward and forward. In multiparæ the uterus was found to be displaced so far upward and forward that its fundus could be felt within a few centimeters of the umbilicus, Fig. 4.

The ballooning of the rectum and vagina before the bladder was allowed to fill with air was found to be of great importance to the ease of the examination of the ureteral orifices, in the fact that the dilated rectum and vagina press from behind upon the base of the bladder, thus bringing the trigonum and ureteral orifices forward and into easy view of the speculum. Neglect of this point and failure to first allow the rectum and vagina to dilate is accountable in large measure for the difficulty found by so many gynecologists in catheterizing the ureters.

The ureteral orifices were seen on, or were indicated by, a slight elevation of the mucous membrane, the "mons uretetris" of Kelly, but in some cases in young nulliparous women, the ureteral opening was indicated by a small round black point. Such a black point was never observed in older women who had borne children.

The bladder, as a whole, when dilated with air and observed during operation within the pelvic cavity—from abdominal section—was found to be ellipsoidal in form, flattened somewhat in its anteroposterior diameter

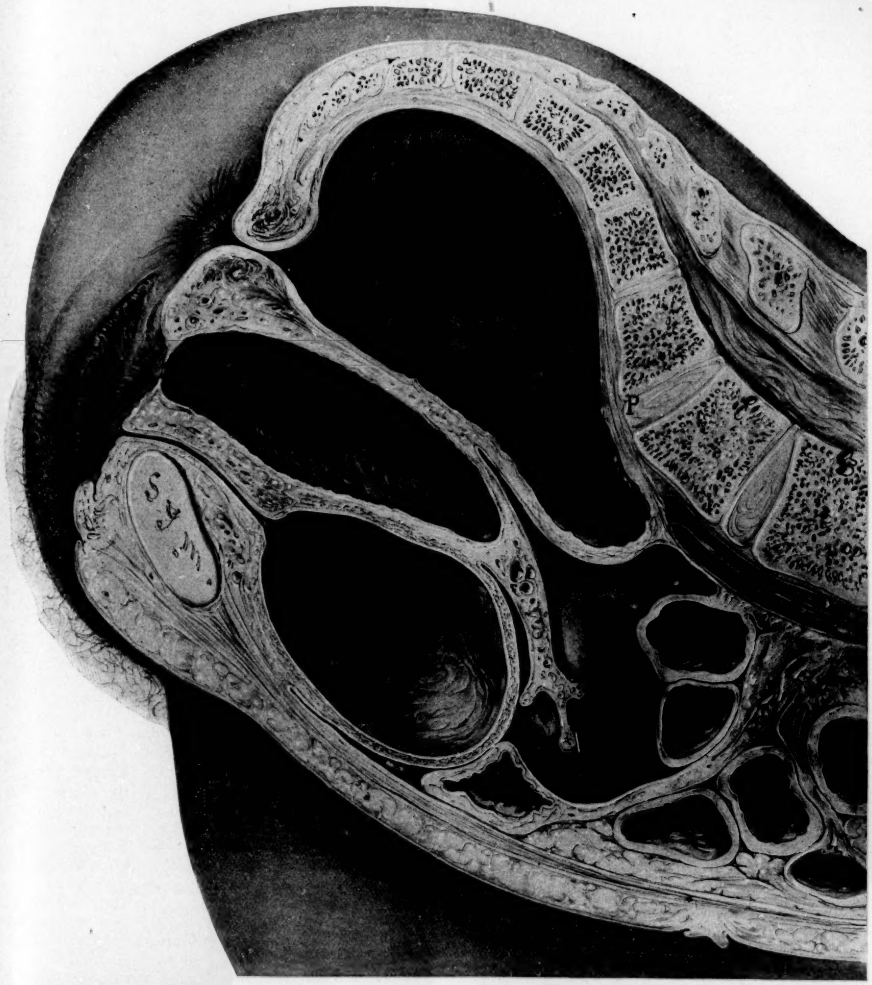


FIG. 4.—Median section, knee-breast posture, showing the anatomical relations of the pelvic organs when the rectum, vagina, and bladder are dilated by atmospheric pressure.

and increased transversely. The transverse diameter was always the greatest measurement. Mathematical calculation of the cubic content of an ellipsoidal viscus of dimensions of the bladder corresponded closely with the actual air capacity obtained by expression.

The average length of the urethra in seventeen cases was 3.3 cm., the shortest urethra measuring 2.7 and the longest 4.2 cm.

It is hoped by the writers that the measurements and observations here recorded, though limited to so small a number as twenty-five cases, may prove of interest and service, especially to the gynecologist, by affording a certain amount of carefully ascertained facts about the relative measurements and topography of the female bladder under air dilatation in the knee-breast posture.

DIPHTHERIA.*

BY EDWIN KLEBS, M.D.

CHICAGO.

I desire to express my appreciation of the honor conferred on me by your chairman, our highly esteemed Chicago hygienist, in inviting me to deliver before this Section an address on diphtheria. The occurrence of a prolonged illness of a member of my family, which terminated fatally, compels me to limit myself to a few outlines of personal observation, as a contribution to the discussion on the disease, the germ of which I have had the fortune to detect.

While acknowledging the success of serotherapy of diphtheria, the doubts expressed by Kassowitz and others only show that we must not neglect to exert all our intellectual powers and to improve our scientific methods with a view of achieving better results. We have still to progress in the development and execution of our prophylactic measures, particularly as regards the destruction of germs in the soil, air and food.

The first object of our attention will naturally be the diseased individual and his surroundings and members of the household, who, while apparently healthy, are really contaminated by germs, for the hair, nose, clothing, the surface of the body and even animals can serve as carriers of infection.

As far as human hair as a means of carrying germs is concerned, I made some interesting observations in Zurich during one epidemic outbreak of diphtheria in 1884.

In a school in that city, in which girls and boys sat in one classroom, separated by an aisle, principally the girls were attacked. The sex could not be regarded as a cause, but the long hair they were wearing. At my request the teachers made careful observations for statistic purposes and we found that children sitting behind others, in whose families diphtheria had broken out, became infected. The same was observed on boys who, because of lack of space, were seated among the girls. The children can infect each other while at play. In the same manner animals can become carriers of infection.

The second object demanding our attention is the patients' surroundings, particularly the garbage boxes and the dust of the street. During the epidemics at Zurich, in 1884 and 1885, open garbage boxes proved the means of spreading infection. I also had occasion to observe that adults who inhaled the dust of such open wagons whirled up by the wind, took sick within twenty-four hours. It is interesting to note, however, that the wind does not carry the infectious material to great distances, but only to limited portions of the town, creating circumscribed areas, as it were. It is plain that the garbage ought not to be dumped near the city, which simply means removing the danger to another spot, but should be burned. Milk alone has not received any attention as a means of carrying diphtheria bacilli; water has been proven to be harmless in that respect. I would recommend that only such garbage boxes should be used as are fitted with good covers, and that the garbage be burned within the contaminated districts. The streets should be subject to thorough cleaning in such districts, using an appropriate disinfectant, as crude carbolic acid for sprinkling purposes. The dust should be collected and burned. We have nothing to fear from contamination of sewers.

TREATMENT.

Isolation should be carried out as much as possible. Every member of the family, or house, should be subject to prophylactic treatment. For the latter purpose I recommend chinosol and antinosin. Those already afflicted should receive antitoxin injection as early as possible. The danger of serum injections seems to be confined to the deleterious action of foreign serum, known as the globulicide qualities of such serum of not human derivation. These globulicide substances can be destroyed by subjection of the serum to a temperature of 60 C., which does not destroy the antitoxic quality, as is shown by Spronck in Utrecht. Further, I would suggest that the needle should only be pushed into the tissue, to make sure that no blood-vessel had been touched. Escape of blood warns us that such is the case and a new insertion must be made and the syringe attached. Only a small quantity of the serum should be injected at first, and the heart watched for a few minutes, when more can be injected. It is an error to recklessly inject 5 c.c. at once, fatal results having come to my knowledge not only in children but also in adults. Soft parts, remote from the heart, such as the hip or loins are the best places for injections. The serum should always contain a small quantity of antiseptics—kresol 0.2 per cent. or thymol in crystals.

Of greatest importance for a successful treatment is a correct clinical diagnosis. Even when membranes are not present, or are invisible because situated in the posterior parts of the nares, or when they are not characteristic enough, resembling follicular tonsillitis, true diphtheria may exist. In most cases the appearance and spreading of membraneous exudation is certainly sufficient for a diagnosis, when associated with general symptoms. In other cases microscopic and bacteriologic examinations afford certain means for a correct diagnosis.

The portion for microscopic and bacteriologic examination should be taken from the edges of the membranes, and from the adjoining, seemingly healthy, portions of the mucous membrane, with a sterilized cotton ball. In the center of membranes it very frequently happens that no bacilli can be found, these having been thrown off. Cultures should be made nowhere except in properly equipped laboratories. For cultures, I may add, dog serum seems to be much preferable to the Loeffler serum, as was shown by Dr. Robert F. Zeit, in my laboratory. For staining microscopic preparations the method gives such characteristic features that we know them as yet only from the tubercle bacillus. The methods of Ernst, and later of Neisser, are by no means so sure and simple. Zeit used a strong staining of the dried cover-glass preparation in methylene-blue

*Presented in a Symposium on Diphtheria, before the Section on State Medicine, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

concentrated solution in 5 per cent. borax, and decolorizes with 1 per cent. Bismarck-brown for three minutes. All true diphtheria bacilli then show the chromatic bodies very darkly stained, whereas the other substance of the bacilli is stained yellow. No other bacillus gives this reaction, which in many cases assures the diagnosis by microscopic examination alone. This method will help the practitioner to make the diagnosis for himself.

The treatment proper can be divided into general and local.

General Treatment.—Serum injections should be made in every case in which a diagnosis of diphtheria can be made even with probability, but should not be registered as diphtheria until the diagnosis is made sure by microscopic or bacteriologic examinations. To enable the proper execution of the latter it is very desirable that properly-equipped stations in charge of specially trained physicians or pharmacists be established by the state, subject to supervision and registration by a central board of health.

Other general, not specific, treatment should be instituted, if a given case suggests such a necessity. Mostly to be recommended are mild hydropathic measures, as practiced in other fever cases. As in other infectious diseases of a highly toxic character, the formation of polynuclear leucocytes in the bone marrow is impeded. Repeated blood examinations with dried and stained preparations should be made, as these will give better indications for treatment than the fever alone. As cold water applications promote peripheral circulation they afford the best means of promoting leucocytosis. Possibly also pilocarpin injections are indicated for that purpose.

Local Treatment.—This has been very much neglected since the introduction of serotherapy. In the use of local antiseptics such chemicals as are apt to endanger the life and action of tissue-cells are to be absolutely avoided. Mild, not irritating, antiseptics, such as chinosol—1 to 1000—or antinosin in 2 per cent. solution, applied to the entire surface of the tonsils, palatum molle, pharynx, etc., with cotton balls, have given good results. The nasal passages should be washed with these same solutions by means of a suitable syringe. Such local applications have healed many cases of true diphtheria in which toxic symptoms were absent. The local use of the antidiphtherin, a ten times *in-vacuo* concentrated filtrate of diphtheria cultures, recommended and proved by me as highly efficient against the local affection and the fever, should not be neglected. This substance could easily be prepared in every laboratory for antitoxic serum. Its manufacture is not prohibited by patents.

INFLUENCE OF ANTITOXIN STATISTICS.*

BY EDWIN ROSENTHAL, M.D.

PHILADELPHIA.

No feature is so conspicuous that proves the specific character of antitoxin as a remedy in diphtheria, as its influence on the mortality records of a city. The *Berliner Medicinische Wochenschrift* was the first to attempt a collective investigation in this direction, and the table so collected and published showed such remarkable results as to become the most potent factor in an argument.

Statistics, to become of value, must be truthful, not only as regards figures, but they must take into consideration the difficult elements that control them. For instance, we should take into consideration under what auspices they were begun, and for what purpose; whether they be the result of certain conditions always the same, or unequal, as an epidemic, or not; again, whether they are the result of a collective body—as the American Pediatric Society—whose purposes are to obtain truths, or whether they be the result of the general reports of health boards, or of indifferent individuals. Of the greatest value and more specific would be the statistics obtained from hospitals devoted only to the treatment of such diseases.

Whatever has been the source, the result in the study of the statistics in the antitoxin treatment of diphtheria has been the same, and whether it be from hospital practice, private practice, or the collective investigation of different medical bodies, the surprising diminution in the death-rate has been so unanimous that this truth remains unquestioned.

No one is better versed in the art of compiling, collating and presenting statistics than Professor Biggs, and in text and other books of reference, the story of antitoxin would be incomplete without his work being quoted. The honor remains with Dr. Biggs to place antitoxin on a certain well-defined footing, and his reports are almost always taken as a basis for comparison. In his various papers, he has gleaned the work of various health boards of different cities, both in this country and abroad, and has presented in an understanding and interesting form, the results thus obtained. As his work is public property, and at this moment is known to all, it would be a repetition of facts to give them here. However, I will briefly summarize, so that I can give his figures as an additional proof, and as a basis of anything new in this paper.

In "Bulletin Number 3" of the New York Health Department, Dr. Biggs presents the results of the four large cities, New York, Berlin, Paris and Chicago, and conclusively shows the fall in the death-rate. For example, in Paris alone, the monthly mortality before the "antitoxin period" was from 108 to 180; after the period it fell to 45 to 56. In Berlin, before the period, the death-rate was 114 to 117, which fell to 47 to 54. In New York, before the period, it was 236 to 317, after the period, 168 to 207. But the most surprising and convincing evidence comes from Chicago, and, as a demonstration, is here published a chart, which showed how a rapidly-rising death-rate was checked by the introduction of the serum, in October, 1895.

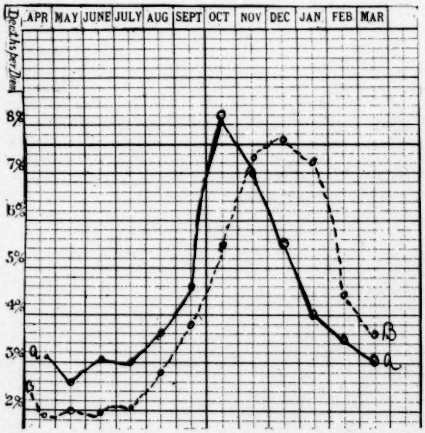
The lines for both years show relatively small number of deaths during the summer, but a rapid increase in the autumn months.

It will be noted that during every month of the second year up to and including October, there was an increase in the fatal cases over the previous year, and that in October the daily death-rate was 8.1 a day, as against 5.5 the previous year. The use of antitoxin was then begun and its influence is graphically shown in the chart. The dotted line B B indicates the mortality from April, 1894, to April, 1895; the line *a a* the mortality from April, 1895, to April, 1896. Antitoxin was introduced at the close of October. To summarize: Of 1468 cases treated by the inspectors, the mortality was but 6.4 per cent.; and of 1112 cases injected during the first three days, but 2.5 per cent.

Philadelphia alone has the unique distinction of presenting a very slight change in her mortality record. This change is so small that the advent of the antitoxin

*Presented in a Symposium on Diphtheria, before the Section on State Medicine, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

has made no appreciable alteration. However, we can show some decline, and if this is small, the record presented since the antitoxin period has been the smallest ever noted. As the Philadelphia statistics have never been presented, I now give them. Independent investigations made by myself have shown some remarkable results. They date from 1882, and were first begun to prove the unity of diphtheria and croup. My investigations were mostly clinical, and for the purpose of proof—being one of the first to recognize and prove the unity of these diseases from a clinical standpoint—I sought and obtained the assistance of Mr. J. V. R. Turner, the registrar of the Philadelphia Board of Health, and through him obtained the statistics of Philadelphia[1], and presented them for this purpose. I sought to show that whenever diphtheria was more or less prevalent in Philadelphia, so was croup, and the ratio was always the same, as was the mortality. These statistics are of value here in this paper, for they show, no matter how the rest of the world progresses in the science of preventive medicine, that Philadelphia stands alone. Remarkable as it seems, it is nevertheless true, for, being a resident of this city, I still meet many who have not taken up the modern method of treating diphtheria,



and a majority of those who only use it partially. For such as these it will take more than figures to convince, and the only argument that suffices is the brute force of experience.

Records have been carefully kept only since 1887, and the following table is an abstract of those given me by our municipal authorities. They will explain themselves.

Year.	Number of cases reported.	Deaths.	Per cent.
1887	1395	858	61.5
1888	1170	623	53.25
1889	1455	727	50
1890	1820	943	52
1891	5153	1874	36.25
1892	4950	1435	30
1893	3471	1159	33.33
1894	3608	1396	38.66
1895	3853	1349	35
1896	3595	1149	32
1897	5405	1474	27.25
1898	4415	1154	26
1899, to May 13th	1277	345	27

To criticise would be to show our shortcomings. There are some in Philadelphia to whom the statistics just presented will be as new as the antitoxin treatment. There are, however, others who have gone on record, and have given results as good as any anywhere. It is surpassing strange that the city that contains a thoroughly equipped bacteriologic and biologic laboratory, and which was among the first to give to the profession, not only the product antitoxin, but also all the literature appertaining thereto, so that the treatment could be rationally followed, should be so far in the rear with its statistical results. But still, with the lack of that unanimity which should be shown in the acceptance of certain facts, Philadelphia still shows a decline in the death-rate. The decline would be still more pronounced if instead of the weak serums furnished by the Boards of Health there were employed other serum of greater concentration and potency, such as Mulford's.

It would therefore not be to the interest of such a wonderful remedy to rely wholly on the statistics of certain localities. But when we find that without exception there is a certain decline in the death-rate of all cities, whether it be large or small, the truth remains unquestioned that this is not from chance alone, but due to certain well-proven causes, and in the question of diphtheria, antitoxin alone remains as the only factor that has influenced all statistics in her favor.

The change that has been ours to witness is still before us, and in nothing is it more marked than in the method heretofore used in presenting our results in intubation. Where before we would speak of our results in percentages of recovery, now we speak of our mortality record, a change that is no more remarkable than in other varieties of diphtheria, and which can only be ascribed to the specific influence of the serum.

517 Pine Street.

[1] Published in Medical Bulletin, September and October, 1894.

THE DECREASE IN MORTALITY OF DIPHTHERIA SINCE THE INTRODUCTION OF TREATMENT WITH ANTITOXIC SERUM.*

BY WILLIAM P. MUNN, M.D.

DENVER, COLO.

The fallacies of statistics are often only too obvious. Ignorance and prejudice therefore gibe at scientific advances the efficacy of which must necessarily be proven by figures. No advance in practice within recent years has been subjected to a more severe test in this regard than has the antitoxin treatment for diphtheria.

Strenuous objection is made, and with some degree of reason, to the exclusion from the mortality rate of some tables of cases to which the treatment had been administered as a last resort, when the patient was practically moribund. It is only fair that this objection should be considered, but it is also fair that it should be offset by the fact that very many practitioners who believe in and practice the use of the antitoxic serum reserve it only for those patients in whom the clinic aspects become well marked, while they refuse to administer it to all as a routine measure, especially excepting those who suffer from a mild diphtheric infection—bacteriologically positive—showing no more severe clinic reaction than a slight smear on reddened fauces.

*Presented in a Symposium on Diphtheria, before the Section on State Medicine, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

The experience of individuals and of large children's hospitals has been the basis of most of the statistic reports that have appeared in literature. An analysis of all the cases of diphtheria occurring in the whole population within a definitely bounded district during a long period and including those that have had all kinds of treatment and have been under the care of practitioners of varying degrees of belief and grades of skill, will furnish a different and highly valuable statistical base of information.

It is therefore my purpose in this paper to very briefly set forth a compilation of information which seems to me to furnish new and valuable cumulative evidence in regard to the effect, on the mortality from diphtheria, of the introduction of treatment with the antitoxic serum.

Denver is a city with a population of 167,000, and the city covers an area of 49½ square miles, the altitude is exactly one mile above sea-level. The statistics of diphtheria prevalence and mortality for ten full years have been collated with a fair degree of accuracy, and represent reasonably reliable observations. Due allowance must be made for all of the elements of error that may enter into the statistics of any city. The population at the beginning of the period was but 96,000, and the area covered was sixteen square miles.

The antitoxin first reached Denver in November, 1894, and but three patients, all of whom recovered, were treated with it before Jan. 1, 1895. The ten-year period may then very reasonably be divided at that date; the six years before 1895 being the full period for which we have figures, as the "pre-antitoxin period;" the four years from January, 1895, to Jan. 1, 1899, representing the "antitoxin period."

During the pre-antitoxin period the diphtheria statistics were as follows:

Year.	Cases.	Deaths.	Mortality.
1889	233	109	46.5 per cent.
1890	720	277	38.6 per cent.
1891	468	175	37.4 per cent.
1892	300	89	29.7 per cent.
1893	318	106	33.3 per cent.
1894	233	71	28.7 per cent.
Totals	2272	827	36.4 per cent.

The foregoing figures, compiled from the official records, exhibit a high mortality, but not in excess of that known to have prevailed in almost all other communities. Still the general mortality shown by the above table is probably too high. The principal factor of error was undoubtedly one of omission in the reported cases. Mild cases were altogether overlooked and second and third cases in families where one case had already been reported were not placed on the records. The slight progressive decrease of mortality from 1889 to 1894 may be attributed to progressively more accurate reports of cases.

The establishment of the bacteriologic laboratory at the beginning of the year 1895 led to an undoubted increase of recorded mild cases. This increase, however, was to a certain extent offset by the exclusion from the records of many pseudo-diphtherias, which would formerly have been officially recorded as diphtheria on account of their clinical appearance.

The reported cases and mortality since Jan. 1, 1895, have been as follows:

1895	248	40	16.1 per cent.
1896	246	19	7.7 per cent.
1897	297	43	14.5 per cent.
1898	386	34	8.8 per cent.
Total	1,177	136	11.56 per cent.

TREATED WITH ANTITOXIN.			TREATED WITHOUT ANTITOXIN.		
Cases.	Deaths.	Mortality. Per cent.	Cases.	Deaths.	Mortality Per cent.
123	9	7.3	125	31	25.1
107	7	6.5	139	12	8.7
147	6	4.1	150	37	24.6
230	8	3.5	156	26	16.7
607	30	4.96	570	106	18.6

In order that the totals of the two tables may be more readily compared I here give them in parallel vertical columns:

	Pre-antitoxin Period. 6 years.	Antitoxin Period. 4 years.
Cases	2272	1177
Deaths	827	136
Mortality	36.4 per cent.	11.56 per cent.

To put it plainly, in the past four years Denver had almost half as many cases of diphtheria as it had during six preceding years, with but one-sixth as many deaths from the disease. The mortality per cent. has been decreased, by some influence, to less than one-third what it used to be; and this is for *all cases* without reference to treatment.

When the cases for the last four years are divided as to treatment with and without the antitoxin, the difference in mortality presented is still more astonishing: Six hundred and seven cases treated *with antitoxic* serum had a mortality of 4.96 per cent.; 570 cases treated *without the antitoxic* serum had a mortality of 18.6 per cent. That is, when the antitoxin was omitted from the treatment four times as many died as when it was used.

This long series of cases, covering every instance of illness from diphtheria known to have occurred within an area of fifty square miles in four years, including all kinds of doctors—good or bad—and all the neglected cases, and all the ones to whom the antitoxin was given as a last resort even when the administrator himself had no hope, showed but one-fourth as great mortality among those treated with antitoxin as among those treated without it.

From the standpoint of severe scientific accuracy one would be justified in a further analysis of the cases and the elimination of moribund ones. But elimination always gives rise to the charge that the figures are juggled. We can well afford to let the figures carry the lesson that is perfectly plain on their surface. Every case of diphtheria should have the antitoxic serum administered. Other statistic compilations have shown that the mortality grows progressively less as the cases are treated with it early in their progress. If every diphtheric infection could be treated on the first day that clinical symptoms are manifested the mortality of the disease would be but a fraction of 1 per cent.

To this statement of the effect on the relative mortality due to the use of the antitoxic serum I desire to add a statement of the actual reduction in diphtheria prevalence and death loss due to the intelligent and purposeful application of preventive measures under the guidance of the bacteriologist.

In 1890 there occurred in Denver 720 cases of diphtheria, of whom 277 died. This was a rate of 680 cases and 261 deaths per 100,000 of population. Had the same rate persisted, the number of cases in our population of 167,000 in 1898 would have been 1135, and 435 of them would have died. Compare these figures with the actual ones—386 cases and but 34 deaths;—in other words, a saving for the one year of 1898 of 749 cases of

illness due to diphtheria and 401 deaths from that disease if the 1890 ratio of prevalence and death had continued to prevail. Had the 1890 ratio of prevalence and death continued throughout the whole ten years, there would have occurred in the actual population of Denver during those years a total of 8993 cases of diphtheria, of whom 3450 would have died.

By the gradual operation of the preventive measures that have been perfected during these ten years, the actual number of cases of diphtheria was reduced to a total of 3449, or a saving of 5444 cases of illness from this one disease. The actual number of deaths from diphtheria has been reduced from the probable total of 3450 to an actual death-loss of 963, or an actual saving of 2487 lives. Had we been able to apply the modern preventive methods of the last four years with an average per annum of but 294 cases and 34 deaths throughout the whole decade, the actual saving of human life would have been still greater, approximating 3200.

This saving of human life and of actual human suffering has been the gift of regular scientific medicine to the communitty in which I live during the past decade in regard to the one disease, diphtheria, alone. It is a gift that has been duplicated in so far as actual life-saving has been concerned in regard to typhoid fever. This public benefaction has been made possible only through the discoveries of modern medicine and their application by the regular medical profession in the interest of the public welfare. It has been forced by us on an unwilling and ignorant public whose individual members and official representatives thought that we were struggling for our own welfare instead of the public good. A lawyer whom the fortunes of politics landed in the position of Governor of Colorado has even had the assurance to place on the public records, in a message wherein he vetoed a medical practice act, the silly assertion that no advance in science for the public welfare had ever been made by the regular medical profession.

The great object-lesson of the diminution of diphtheria and typhoid fever in the community where he himself has been privileged by a merciful Providence to live for thirty long years has been altogether lost on him. We are sometimes so irritated by the existing order of things that we protest, like good old David, against the folly of those who are high in power. We ask ourselves, "Is it worth while to labor for the welfare of a blind and thankless people?"

The answer is older than holy writ. It lies within our own hearts and it must still be the inspiration for future work. Duty done is its own best reward. The plaudits of an ignorant world might make work easier, but can not make it more honorable; the crackling of thorns under the pot adds no heat to the fire.

THE ASSOCIATE INFECTIONS OF SCARLET FEVERS.*

BY W. J. JAQUES, M.D.

CHICAGO.

The object of this paper is to call attention to the fact that scarlet fever is seldom a single infection, and its successful treatment necessitates a knowledge of all the factors contributing to the abnormal condition.

It has not yet been positively demonstrated, at least it is not generally accepted, that the causative agent of scarlet fever is a germ, although there is much evidence to indicate it. Each case seems to come from some other case, and under certain conditions it is known to be highly contagious. It also resembles other diseases which we know are caused by a germ. The difficulty of staining the tubercle bacillus delayed its identification. Some similar characteristic may be preventing the identification of the scarlet fever germ.

During the past winter, Dr. J. W. Class[1], Chicago, called the attention of the medical world to a coccus that he found constantly present in the scales and mucus taken from scarlet fever patients. Its size is exceedingly variable. From a small dot hardly to be seen with a one-twelfth objective, it becomes three or four times as large as the gonococcus, which it resembles in shape. The size depends on the age of the culture, and the growth in the mouth is less than that on culture-media. In growing, the cultures produce a gelatinous substance which is drawn out in strings with a platinum needle. It does not seem improbable that these cocci may enter the blood in their minute form, clogging and congesting the capillaries.

Since the description of this germ and the method of staining were given, I have taken cultures from all cases of scarlet fever coming under my care and found it uniformly present. I have also found the germ present in a small proportion of the cultures which I examined for suspected diphtheria. In three cases of scarlet fever I was enabled to make the diagnosis of scarlet fever before any appearance of rash. I did this from the malignancy of the germ as indicated by the numbers and the rapidity of their growth. I have also found the germ present in the throats of adults and nurses who were taking care of patients with this disease. However, it takes the combined evidence of many observers to arrive at definite conclusions, and until this, or some other, germ is identified and enough of its characteristics are known to show us a better way to protect ourselves, we must rely on the knowledge and experience of the past.

Every advance made in scientific medicine must be based on an accurate knowledge of physiology. When the functions and conditions necessary for normal metabolism are understood, it will not be difficult to comprehend the causes of abnormal metabolism, or disease.

We should keep before us the importance of the individuality of the cell; that it is the basis of all forms of life from the minutest bacteria to the giant of the forest. All the higher forms of life are built up out of structural units similar to the simple bacterial cell.

The human body, for our present purpose, may be considered as made up of groups of individual cells, performing distinct as well as general functions. The pathogenic organism that attacks it is also a cell having like functions of absorption, excretion and reproduction. It becomes pathogenic when it finds in the human body suitable conditions where it can complete its cycle of activity.

The study of a germ disease, then, resolves itself into a study of the patient and those conditions which produce susceptibility; also a study of the germ and the environment which causes it to become pathogenic. A contagious disease may be likened to a union of two pieces of chain, the links of one piece, produced by a cycle of events in the germ, and the other by a cycle of events in the patient. The chain may be broken by breaking one of the links.

A germ is pathogenic only in the presence of a susceptible individual. The environment which causes susceptibility in a patient may also increase the virulence

*Presented in a Symposium on Diphtheria, before the Section on State Medicine, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

of the germ. During the winter months, when confinement and lack of sunshine causes a decrease in vital resistance, the virulence of the germs of diphtheria, pneumonia and influenza is greatly increased.

The whole phenomena of life is a battle of cells. Outside of age and hereditary influences, the survival of the fittest depends on environment. By changing the conditions of environment in the patient, we may prevent that part of the chain from forming. By changing the environment of the germ, the chain is broken there. No one contracts tuberculosis until a suitable soil is first produced on which the bacilli will grow. The cholera bacillus is pathogenic only in the presence of decomposing filth.

Susceptibility to many germ diseases may be caused by exposure, lack of nutrition, loss of rest, or any other factor which causes a lowering of physiologic resistance; but susceptibility to malaria and diphtheria may exist in health. In many fermentative processes the germs succeed each other, one preparing the way for a second. A person may be susceptible to but one disease and that may produce susceptibility to another. Phthisis often follows pneumonia. Sanarelli points out that the causative germ of yellow fever is the bacillus icteroides, which multiplies in the human body to a limited extent; that the toxin produced by it facilitates secondary infections of all kinds which cause death.

It is my belief that a similar condition exists in scarlet fever. A distinct contagious element enters the body and multiplies. To a greater or less degree it causes constitutional disturbance and characteristic erythema. The physiologic resistance of the patient is lowered in direct ratio to the virulence of the contagion. The Klebs-Lœffler bacilli and pus germs infest the mouth and may remain there for long periods without causing disease. When from any cause the physiologic resistance becomes lowered, they invade the tissues. Thus, if a child contracts scarlet fever and other germs are present in the mouth, it is highly probable that secondary infection will follow.

Since our use of the microscope in the study of these infections, we are enabled to distinguish the clinical symptoms which accompany the invasion of many of these germs. In pure Klebs-Lœffler diphtheria there may be little pain and no temperature. The presence of diphtheria may be completely covered up by the more pronounced symptoms of scarlet fever. Clinically, it is impossible to diagnose the presence of diphtheria with scarlet fever during the first thirty-six hours. If the rash appears at the end of this time, the doctor usually makes the diagnosis of scarlet fever, and is satisfied. In such a case, if death should occur, the most important factor in causing the death, namely the diphtheria toxin, may not have been recognized.

The most dangerous infection associated with scarlet fever is diphtheria. Unfortunately many of the textbooks speak of this as being rare. Rapid transit and commercial exchange have greatly aided the distribution of germs. A few years ago an epidemic would not spread beyond a single neighborhood during the period of susceptibility. Now the spread of the influenza bacilli from one end of the continent to the other is only a matter of hours. Every factor which affects the condition of mankind must change his relation to germ disease; and every new method of hygiene and sanitation must affect the environment of the germ; hence the constant change in germ diseases. The use of diphtheria antitoxin has had the effect of lessening the fear of the public, and less care is taken to isolate diphtheria patients; hence a wider dissemination of these bacilli.

"F. Ranke[2] found diphtheria bacilli present in the throats of 53.7 per cent. of scarlet fever patients in Munich. Goodall[3] made a bacteriological examination of 87 cases of scarlet fever admitted into the Eastern fever hospital. The examination was made immediately after admission. The diphtheria bacilli were found in 19 cases. They were mild and would not have been recognized clinically as diphtheria. One of the cases subsequently developed post-scarlatinal diphtheria and so did four other cases in whom no bacilli were found on admission. Sverensen[4] examined 1547 scarlet fever patients on admission to the fever hospital at Copenhagen and found diphtheria bacilli in 2.5 per cent. Beggs[5] found diphtheria bacilli in the throats of 51 out of 140 cases of scarlet fever examined." The spread of germs being such an uncertain factor would explain partly the difference in results of these observations.

While the Klebs-Lœffler bacilli are comparatively rare, the pus germs are almost always present. The streptococcus pyogenes causes the most painful and lasting of the anginas. Most cases of scarlet fever, after the symptoms of the specific contagion abates, resolve themselves into streptococcus infections. The first infection leaves the patient susceptible to invasion and there is often a general infection of the tissues and glands of the buccal region. The inflammation also extends into the middle ear and injures the delicate bones of the auditory apparatus. The judicious use of antistreptococcic serum is of value in preventing such sequelæ. Not every case of scarlet fever requires the serum. From the clinical symptoms of the patient, and the malignancy of the pus germs as indicated by the culture, the physician must decide as to treatment. In most cases death is preferable to a deaf and dumb child, and it is as important to prevent scarlet fever from reaching the suppurative process in the ear as it is to cure the disease.

During the season of its prevalence influenza may often be found associated with scarlet fever, but its toxin has not such fatal effects on children as on adults. Measles, mumps and other diseases of childhood are apt to follow or be found with scarlet fever, appearing either as primary or secondary infections.

It should not be inferred that in these associate infections each germ presents itself in its most malignant form, thereby increasing the severity of the cases many fold. Usually the conditions for malignancy favor but one germ at a time, the rest appearing in a minor rôle until a change of conditions permits their more rapid development.

Proceeding on the belief that scarlet fever is nearly always accompanied or followed by other infections, with a similarity of clinical manifestations during the early stages, it must be apparent how important a part the microscope has come to play in a correct diagnosis. If it can be known just what germs are present and the degree of malignancy, as indicated by their growth, treatment may assume the initiative and defensive, or preventive form, with a more favorable prognosis than is possible with a delayed diagnosis.

The first step to be taken in the treatment of every angina, however mild it may appear, should be the taking of a culture. This should be followed at intervals during the progress of the disease by other cultures, to show by the morphologic changes whether the infection is subsiding or increasing; also whether or not the conditions have been favorable to the growth of other germs.

With the bacterial evidence well in hand, the clinical symptoms become clearer and more definite, consequently easier to control by treatment. There is no one line of treatment which will fit every case of scarlet fever for the very reason assumed in the beginning, that it is so often modified and complicated with other infections. The kidneys, heart and nervous structure must be closely watched. The larynx may become involved. Nutrition must be strictly maintained and the destruction of renal tissues prevented. The selective action of scarlet fever poison and the toxins of associate infections must be kept constantly in mind. The stupor resulting from scarlet fever poison is not so serious nor important as if it is caused by the Klebs-Lœffler bacilli. In the latter case a process of degeneration of the nerve center is instituted which is likely to continue; it may be slowly or rapidly, resulting fatally; if not at once, it may be days or weeks after apparent recovery. This is not so with stupor caused by simple scarlet fever infection.

The prognosis is more favorable when this mental condition is caused by the scarlet fever toxin, and this knowledge should inspire hope while life is present in the patient. As long as the heart beats, every means should be exhausted to sustain the strength. In one of my cases oxygen gas and artificial respiration for thirty minutes tided the child over the crisis of the disease.

In malignant and prolonged cases of scarlet fever, the assistance of one or more trained nurses is absolutely necessary. This training must include infectious diseases, which are not usually part of the hospital course.

Not only should the nurse be familiar with the different manifestations of scarlet fever and the best methods of meeting them, as well as the most effectual means of disinfection, but she should be reasonably satisfied of her own immunity. Neither nurse nor physician should be handicapped by a fear of the disease, as the successful issue of a case may require most strenuous efforts and even the constant presence of both for a time.

With all these conditions accepted and carried out, deaths from scarlet fever complications will probably not be eliminated, but they will be much reduced.

4316 Greenwood Avenue.

BIBLIOGRAPHY.

1. JOURNAL, April 8, 1899, p. 765.
2. Munich Med. Woch., Bd. 42, 1896.
3. Epidem. Soc. Trans., 1896.
4. Zeit. f. Hyg. u. Infections-Krankheiten, 1898.
5. Met. Asylums Board's Report, 1895.

WOULD SURGERY SUFFER IF IODOFORM WAS ABOLISHED?*

BY EDMUND C. BRUSH, A.M., M.D.

Member Ohio State Medical Society; Member American Medical Association; Consulting Surgeon to Zanesville City Hospital, etc.

ZANESVILLE, OHIO.

You may break, you may shatter the box, if you will,
But the scent of iodoform will linger there still.

If something else just as efficacious can be found, or is at hand, then iodoform should be forever banished, on account of its odor if for no other reason. This odor is unmistakable, and to-day the laity know it quite as well as the physician. "Once smelled, always remembered," is surely true of this promiscuously used drug. You meet a man on the street and, as he passes, you get a whiff of iodoform; you at once wonder whether he is a physician or a patient. You enter a sleeping-car and the well-known odor comes to your attention; you at once look over your fellow passengers for the suspected one. You get the same odor in the ballroom or in the church, and you at once wonder who has it concealed about the person and why.

I am fully aware that the reign of iodoform is on the wane, and, hoping to add to its non-use I present the subject here. To get substantial data from which to draw conclusions and to give influence, I sent out a circular letter to representative surgeons in Great Britain, Canada and the United States. All of these letters went to gentlemen who hold surgical positions, a large majority being professors of surgery in medical colleges. Medical schools in London, Edinburgh, Dublin, Quebec, Toronto, Montreal and twenty-two of the United States are represented in the replies; so that the information is general and not in the least localized. The circular letter read as follows:

DOCTOR:—I am preparing for the coming meeting of the AMERICAN MEDICAL ASSOCIATION a paper entitled "Would Surgery Suffer if Iodoform Was Abolished?" In order to give weight, either for or against the question, I am writing to one hundred representative surgeons and asking them to answer the accompanying questions. Will you favor me by answering the questions and returning this letter in the inclosed envelope? Sincerely yours,

E. C. BRUSH.

The first question asked was: "What germicidal powder do you prefer? Of the 84 replying, 27 used iodoform, 24 used no powder of any kind, 12 boric acid, and 8 used aristol. The remaining 13 used acetanilid, nosophen, iodol, etc.

The second question was for second choice of powders, and the answers have no special significance.

The third question was: "Have you seen any bad effects from using iodoform? If so, what?" Seventy-three report that they have seen bad effects, 11 have not, but 4 of the 11 have seen no bad effects because they did not use the drug.

The fourth question was: "Would, in your opinion, surgery suffer if iodoform was abolished?" Thirty-seven think that the drug could be abolished without any detriment to surgery, 47 that surgery would suffer. Of these 47, 27 think the detriment would be in a general way; 12 limit the loss to the treatment of surgical tuberculosis, and 8 consider the loss to be only in connection with its use in the manufacture of gauze, and in specific cases.

The third question: "Have you seen any bad effects from using iodoform? If so, what?" is the most important and the one bearing directly on the question at issue. Please remember that 73 out of 84 report bad effects, and these range from a slight local dermatitis to death; 28 report local dermatitis, 3 general dermatitis, and 5 report eruptions, and 20 iodoform poisoning without any qualification; 2 report delirium and collapse, 5 intoxication, 14 general systemic effects, 1 congestion and inflammation of the kidneys, 6 delirium, and 1 reports paralysis. Five deaths are reported.

The difference between the number of ailments reported and the number of gentlemen reporting them is due to the fact that several different surgeons report several different toxic effects. Then, too, it is evident that many of them, although using different words, probably mean the same thing. For instance, 20 mention iodoform poisoning and 14 general systemic effects. The two expressions are, no doubt, in a measure used synonymously. It will be noticed that about all of the known poisonous effects of iodoform are mentioned by the 75 surgeons who report them. It might be well to remember that 73 form a very small proportion of

*Presented to the Section on Surgery and Anatomy, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

the number of physicians in this world who have used or are now using iodoform.

Let me give some individual answers and opinions. Dr. John H. Brinton, Philadelphia, professor of practical surgery and clinical surgery, Jefferson Medical College, uses as a powder, "acetanilid alone or in combination with boracic acid and aristol." He thinks surgery would suffer without iodoform. Dr. H. H. Mudd, professor of surgery and clinical surgery, St. Louis, uses some preparation of boric acid, and in reply to the question of surgery suffering from the abolishment of iodoform, writes, "no, not seriously." Dr. L. McLain Tiffany, Baltimore, of Johns Hopkins Hospital, and professor of surgery in the Baltimore School of Medicine, uses no dusting powder and thinks that surgery would suffer if iodoform was abolished, "in local tubercular troubles undoubtedly." Dr. P. S. Conner, Cincinnati, professor of surgery, Ohio Medical College, does not use any powder as a rule, but usually aristol when any is used. He thinks that iodoform could be abolished without any detriment to surgery. Dr. N. Senn, Chicago, professor of surgery, Rush Medical College, writes, "as dusting powder I use boracic acid 4, salicylic acid 1." To the last questions he answers, "yes, I attribute to iodoform valuable antibacillary action in case of localized tuberculosis and inhibitory effect in pus microbes." Dr. G. G. Kenyon, San Francisco, surgeon to St. Luke's Hospital, etc., uses acetanilid and thinks that surgery would suffer without iodoform. Dr. A. Primrose, Toronto, Canada, professor of surgery, University of Toronto, uses iodoform in tubercular cases only. Dr. I. G. Roddick, Montreal, Canada, professor of surgery, McGill University, uses it in tubercular cases; as a dusting powder he uses nosophen, iodol and boric acid. Dr. M. J. Ahern, Quebec, Canada, professor of surgery, L'Université Laval, uses iodoform and thinks surgery would suffer without it. The same is true of John Chiene, Edinburgh, Scotland, professor of surgery, University of Edinburgh. Dr. Christopher Heath, London, professor of surgery, University College, writes: "I consider iodoform the best antiseptic in all operations about the mouth and that the use of it has in my experience considerably reduced the mortality after operations for removal of the tongue." Dr. James Berry, London, surgeon to the Royal Free Hospital, says: "For clean, i. e., aseptic, wounds I never use iodoform or any other germicidal powder. I treat all such wounds by the dry aseptic method, and for several years have not used any kind of antiseptic to the *interior* of such wounds. For septic wounds, open sores, etc., I often use iodoform and find it useful. I have on several occasions seen, in the practice of others, bad effects and even death, itself, follow the use of iodoform. These have been chiefly cases in which large amounts have been buried in a wound. As these cases were not in my own practice, I am not at liberty to mention any details. I have several times seen a low form of delirium, attributable, I believe, to the iodoform, follow its excessive use in cases of removal of the tongue. I, myself, never use it in such cases. In reply to your fourth question, I think that surgery would suffer if the use of iodoform in open, i. e., septic, wounds were given up, but I do not think that surgery would suffer if the use of iodoform in the interior of aseptic operation wounds were abandoned completely."

Dr. Charles B. Ball, professor of surgery, University of Dublin, writes that he uses "boric acid and glutol in all non-tubercular cases." The question, "would surgery suffer if iodoform was abolished?" he answers with: "I do not think anything answers so well after excision of a tubercular joint."

A careful summing up of the answers given to the inquiries makes a strong case against the use of the drug excepting to a limited extent and in a limited number of cases. Many surgeons think that surgery would not suffer if there was no such thing as iodoform. There is no doubt that the indiscriminate use of iodoform has done untold injury. If those who use it in local tuberculosis and in specific cases had something else just as good, iodoform would really lose its chief supporters.

So the answer to the title of this paper, "Would surgery suffer if iodoform was abolished?" can be written, "Yes, to a very limited extent!"

Let me predict that in five years, by reason of the discovery of better things, the answer can be written, "No, not in the least!"

DISTILLED WATER AND BOILING FOR THE STERILIZATION OF SURGICAL INSTRUMENTS.*

BY W. K. ROGERS, M.D.,

COLUMBUS, OHIO.

The effort to find a means of trustworthy sterilization of surgical instruments has been a particularly perplexing task to the oculist, in view of the extreme delicacy of most of the instruments used by him, and the subject has, perhaps, gone through more phases in his hands than has been the case even with the general surgeon. An ideal method has yet to be found, but the writer has been so much better satisfied with the results obtained by boiling instruments in distilled water, than by any other, that he feels impelled to go into a few brief details and comparisons with some other methods in the hope that others may avail themselves of this practice until better means can be developed.

It is important to emphasize that by distilled water is not meant the product of wholesale vaporization so often masqueraded under that name, in this day of speed at any price, to the detriment of solutions which it is intended to form, and the deception of all who confide in it. The water must be condensed steam, such as a chemist would use for careful analytic work, and not cooled vapor. If attention is paid to this essential detail, the most delicate metal instrument may be boiled for an hour without impairing its surface or sharpness. Ten minutes, however, suffices to sterilize a bright, mechanically clean instrument. Ivory handles, if properly fastened, will stand the same treatment, except that they will become a little yellow if boiled for more than twenty or twenty-five minutes. It need scarcely be added that instruments must be lifted from this solution before cooling, as even the most perfect aqueous product of the still will cause rust under favorable circumstances.

The writer's attention was attracted to this procedure some five years ago, as no amount of soda nor other chemical introduced into our lime impregnated water would prevent a considerable deposit on the surface and the ruin of the edge of instruments. Distilled water was substituted for hydrant water without any thought of a difference in the effect of its use, but the result was so gratifying that a little care was taken to

*Presented to the Section on Surgery and Anatomy, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

note the contrast between this and other methods, and between the use of perfectly and imperfectly distilled water, with the conclusion that if instruments were to be sterilized by boiling, the farther one departed from perfect purity of the water, the worse was the result.

The addition of soda to ordinary water seems to allow comparatively large instruments of simple construction to be boiled without injury, but a deposit takes place on the surface which, when involving delicately or intricately made instruments, results in more or less damage and is especially hard on cutting edges. I have found sterilization by vapors so unreliable that I will take up no time with the details.

Chemical sterilization has also proven very unsatisfactory, all aqueous solutions having a tendency to attack the edge of knives. Only one substance, formalin, when used according to the method so admirably worked out by Dr. Lippincott of Pittsburg, has seemed to be efficient. But the process involves prolonged immersion and practically means keeping one's armamentarium in the solution, which it would seem might be rather inconvenient, especially with the large equipment of the general surgeon. And for operations within the eye, instruments must be wiped with some sterilized substance before they can be used. Several other chemical substances were tried, and among them lysol was found to be rather the least objectionable, but in any strength it can not be relied on to sterilize infected instruments in a reasonable time. A knife blade thickly coated with pus from an ordinary phlegmon retained active pyogenic germs after two hours' immersion in the undiluted solution. A similarly infected blade, when wiped clean, became sterile after one hour's immersion in a 1 per cent. solution, but the edge had become perceptibly dulled. A control blade, not so disinfected, yielded an active culture in gelatin. Practically the only objections to this method were the damage resulting to cutting edges from all aqueous solutions, and the necessity, as in the case of formalin, of wiping instruments for intraocular operations.

The absolute reliability of boiling water is so well appreciated that no bacteriologic experiments were made in its behalf, the writer confining his attention entirely to the effect produced on cutting edges of instruments. If our ordinary hydrant water was used, the edge of a knife was ruined, and in fact the whole instrument was damaged. The addition of soda to the water prevented the latter trouble, but only slightly lessened the harmful result to the edges. Rain water, and the condensed vapor of the artificial-ice establishments yielded less disastrous results, but still a knife boiled in these solutions, even with the addition of various preparations of sodium or potassium, was unfit for delicate use. As a consequence, inquiry of a large number of general surgeons elicited the information that, while instruments in general were usually prepared for operations by boiling, knives were simply scrubbed carefully, or scrubbed and dipped in alcohol. The efficiency of alcohol as a disinfectant has been so frequently questioned that its use seems almost superfluous.

In conclusion it was found that not only may instruments be safely boiled in distilled water a sufficient length of time to become sterile, but also if distilled water is used in a sterilizer that is free from oxidized metal the vapor and steam thus generated can be availed of for the preparation of instruments, dressings and other appurtenances of an operation without harmful results to any of them, which would seem a convenience and simplicity greatly to be desired.

THE EYES AND EARS OF EMPLOYEES OF TRANSPORTATION COMPANIES.

BY FRANK ALLPORT, M.D.

Professor of Ophthalmology and Otology in the Northwestern University Woman's Medical School; Professor of Ophthalmology in the Chicago Policlinic; Oculist and Aurist to St. Luke's and St. Joseph's Hospitals.

CHICAGO.

Color-blindness is an abnormal condition of the visual apparatus, causing an inability to accurately, invariably and properly distinguish the colors of the solar spectrum. Several varieties exist, but the most frequent is that causing difficulty or impossibility in distinguishing between red and green, which is especially unfortunate, as these colors are universally adopted as important signals in transportation service.

Investigations indicate the universality of chromatic aberration in all observed nations, but with diminished frequency in the educated, and in peoples possessing great love for colors and artistic decorations such as the Africans, Japanese and Chinese. Indeed, it is claimed by some observers that the people of India are able to perceive 300 different shades of colors not perceptible to European eyes.

No evident physical manifestation exists rendering an objective diagnosis possible. Opinions as to color visual acuity must therefore rest on tests, which are well described in text-books.

My brother, Dr. W. H. Allport of Chicago, in examinations of over two thousand negro men, failed to find a single case of even incomplete color-blindness. This has been observed by others, so that the observation is well authenticated.

Instances are occasionally recorded (Hilbert, Woinow, Hasner, Schröter, Mayerhausen and others) of excessive chromatic sensibility amounting to chromophobia, where the exhibition of specific colors produced great fear, pain and other neurotic sensations, probably of cerebral origin.

Lussona mentions two students, with aural sensations distinctly associated with chromatic conception. High voices produced subjective sensations of red; low voices of black. A bass voice sounded black, a baritone dark brown, etc. Toxic color sensations are noteworthy, as hyoscyamus niger, duboisin and atropin produce red vision, santonin and picric acid, yellow vision, etc. These instances point to cerebral color perception, and Samelsohn, Landolt and Wilbrand advocate a separate color cortex, which is, however, denied by O. Bull, Dahms and others.

The term "color-blindness" is misleading, and too comprehensive, and conveys the impression of invariable total chromatic exclusion. I would suggest the terms "color amblyopia" and "color amaurosis;" the first to indicate the frequent conditions of partial loss of chromatic sensibility without apparent lesion, the latter to indicate that rare condition denied by some authors, although vouched for by Querenghi and others, of total loss of color sense without apparent lesion, where all objects appear in black and white, like a crayon or photograph.

Color ambylopia or amaurosis is not induced by any chromatic alteration of the ocular media. It is probably occasioned by some abnormality of the receiving (retinal) fibers, the conducting (nerve, chiasm and tract) tissue or the perceiving (cuneus) apparatus. Pathologic alterations of the color receiving, conducting and perceiving elements in any of these anatomic and physiologic subdivisions, may alter chromatic com-

prehension, as color vision and form vision occur under similar conditions of reception, conduction and perception.

Color sensations depend primarily on the frequency of etheric vibrations, proceeding from colored objects. A ray of white light is synthetically composed of various rays of different wave lengths, each possessing distinct vibratory frequency, representing corresponding chromatic impressions. Pass such a ray into a darkened room, through a small aperture, on to a white screen, or through a transparent prismatic apex, and a separation of the ray into its constituent chromatic elements occurs, with blue or violet at one end of the spectrum, and red at the other, the former possessing about seven hundred and fifty million million vibrations to the second, the latter about four hundred million million. The intermediate rays, significant of orange, yellow and green, possess vibratory disturbances of from four to eight billions per second. These various etheric vibrations, which we ultimately designate as colors, fall on the retinal rods and cones with distinct but graduated degrees of intensity, dependent on their vibratory frequency, and these impressions are instantly dispatched to the cerebral cortex for analytic chromatic interpretation.

The phenomenon of primary retinal color reception is explainable by a series of physiologic processes, beginning, as just mentioned, by the dispersing from colored surfaces of light rays of differing rapidity of action.

The retina is assumed to contain three distinct nerve elements, corresponding and responding to the various degrees of etheric vibrations, ultimately interpreted as the three primary colors, violet, green and red, from which all chromatic varieties emanate. All varieties of light then impress the three groups of retinal color fibers at the same time, but with different degrees of intensity. The central portion of the retina is adapted for the reception of all three of the primary colors, and their multiplying shades. In the adjacent retinal zone, red is not distinguished, but green and blue remain. Still farther from the central retinal fibers only blue can be seen, and near the periphery merely black and white are distinguishable. We therefore have color amblyopia for red, green and blue, the latter being exceedingly rare, so that when color amblyopia is mentioned, it practically refers to either the red or green variety.

Stimulation of one set of retinal fibers, by etheric vibrations of definite frequency, from a red object, produces a sensation of red; stimulation of other sets by vibrations of differing frequency, produce green and blue—or violet—sensations. These may be merged or mixed with each other, in varying proportions, to produce all known colors, and the inertness or loss of any particular set of retinal nerve-fibers, or its corresponding color wave sensation, lessens or obliterates this chromatic element—with its modifying influence on all other colors—from the ocular and cerebral sensibility of an individual. Such a defect may include one, two or three of the primary colors, with proportionate elimination of chromatic perception, thus subtracting the missing color or colors from defective chromatic vision, and compelling such amblyopic to perceive colors, *minus* that which is missing, producing a modification in the appearance of all colors, in which the missing one naturally participates. For instance, a person who is amblyopic for red can only accurately comprehend those colors capable of production from varying and shifting degrees of green and blue—or violet—etc. It must not be forgotten, however, that such congenital defects of chromatic conception may not be complete in character, but merely partial, thus producing a fractional loss or weakness of individual color conception. Such cases are frequently difficult of diagnosis, as distinct lines of color amblyopia are not clearly drawn, and tests may vary from day to day.

The above outlined theory of color reception is in favor with scientists, and comprehensively explains isolated chromatic subtraction, by inertness or loss of certain retinal fibers, which may involve any or all elements of retinal color control. It must, however, be remembered that ultimate chromatic perception resides in the cuneus, and is a cerebral function, and that no matter what may be the physiologic retinal arrangement, and whatever theory of reception may be adopted, the bulbar oculi is merely the gateway through which chromatic sensations pass and separate, en route for the cuneus, via the optic nerve, chiasm and tract.

Color amblyopia or amaurosis may be congenital or acquired, the former being indicated when commonly speaking of color-blindness.

Congenital color amblyopia or amaurosis is unquestionably a hereditary taint, frequently afflicting several members of the same family, and occurs in about 4 per cent. of the male, and less than 1 per cent. of the female population. The cause for this disparity is unknown, unless frequent color occupation incident to feminine vocations leaves its impress on the female sex, an argument favoring the color educational theories of Magnus, Cohn and others. If color familiarity in females may influence succeeding generations, and if oriental nations with lurid propensities show lessened color amblyopic percentages, why may not color education in schools impress, if not the present, at least, subsequent male generations? One benefit would at least result from color tests in school, viz., the early disclosure of color amblyopics, who would thereby avoid subsequent life occupations demanding chromatic stability. Congenital color amblyopia or amaurosis is a natural, often inherited defect, no more capable of alteration than blue irides or *normal* color perception. It is quite as impossible for color defectives to appreciate true chromatic qualities as for color experts to misunderstand primary spectral impressions.

Favre advocates color education for amblyopics hoping for curative results; but observation of this method evidences the accomplishment merely of a better appreciation of chromatic intensities or tone gradations, and associated nomenclature, which simply masks or disguises an incurable congenital defect, and augments the danger of employing such persons in positions of trust.

Color ignorance—which can only be cured by education—should not be confounded with color amblyopia, as no abnormal condition exists, but lack of chromatic exactness and nomenclature frequently causes suspicious indications, in persons unfamiliar with colors. Unbelievable ignorance frequently exists, concerning chromatic impressions and nomenclature, creating much misunderstanding and confusion, in tests where color *names* and not *comparisons* are principally used. Name tests should be employed, where applicants will occupy positions necessitating the quick communicating of colors to others, as in look-out men on ship board; but these tests should not be confounded with tests for color vision. Such confusion of purpose leads to unreliable conclusions, which not only are frequently fa-

vorable to a color amblyopic, who by luck, sagacity and experience in estimating color intensities succeeds in eluding detection, but also militates against an applicant with perfect chromatic comprehension, but ignorance of its nomenclature.

As Jeffries says: "The names of colors are naturally the objective expression of subjective sensations." Early observations and education associate names and objects together in firm cohesion. A cat is known as a cat, and a horse as a horse. Likewise, a certain color is known as red, another as blue, etc. A child might just as well, however, be taught to call a cat a horse, or red, blue, and remain in blissful ignorance of this misappropriation of terms until rudely disillusionized.

Color amblyopics are frequently unaware of their defects, their erroneous chromatic conceptions being to them of a real and unimpeachable character. Colors convey to them an actual, if incorrect, impression, which they retain and associate with certain exhibited chromatic tints. They have, for instance, heard green referred to as green, therefore when green is exhibited they often correctly call it green, although it to them appears what we would call gray, thus deceiving not only themselves but us. Association with objects and persons leads color amblyopics to associate objects with accepted chromatic expressions. They have heard cherries and strawberries called red, and leaves and grass green; consequently, when asked their color they answer correctly, although possessing no proper chromatic impression. It must not be forgotten that congenital color amblyopics usually unavoidably comprehend from early life that something is amiss with their color sense. This ill-defined knowledge may ultimately assume a definite understanding of their misfortune which they seek to disguise, especially if engaged in railroad or maritime service. They become very cautious in naming colors unless they have good reason to believe their impressions to be correct from observation, chromatic intensities, hearing other people's opinions, etc. The loss of one sense always augments the power of others, as witnessed in the blind and deaf, who frequently acquire incomprehensible skill in vicarious or compensatory service. Color amblyopics usually possess a keen discrimination of chromatic intensities, and base their interpretations of colors on these tone gradations, which are to them the essence of chromatic distinctions. While congenital color amblyopia is incurable, the acquired form is amenable to treatment, as its etiology is incident to tobacco, liquor and other toxic agencies, diabetes, albuminuria, exhausting illness, such as typhoid fever, head injuries, cerebral diseases, neurasthenia, syphilis, rheumatism, diseases of the optic nerve, retina, choroid, etc. It may occur in an individual—previously and favorably tested for chromatic perception—incident to some of the above conditions, and may occasion no comment because of its possible incipient and isolated character, lack of self observation by the individual affected, or determination on his part not to disclose a physical condition, which would be equivalent to his discharge if known. Therefore, acquired color amblyopia is the more dangerous form because unsuspected, ill-defined, and because the individual has not, as in the congenital type, become accustomed to the condition since childhood, and learned by observation, tact, ingenuity, analysis of color intensities, etc., to quite successfully cope with an inherited defect. It is therefore distinctly recommended that engineers, firemen, pilots, etc., should always be re-examined after injuries, illnesses, etc., and it is further advised that such employees who are known to be excessive consumers of tobacco and liquor should be subjected to inspection annually. Acquired color amblyopia is not of the evenly distributed and symmetric character natural to a congenital defect, but may be caused by pathologic invasions of any portion of the color receiving, conducting and perceiving apparatus, thus frequently producing erratic and peculiar chromatic phenomena. Color scotomas may be found in most portions of the visual field, but are most apt to be somewhat central in their location. For instance, central scotoma for red is quite characteristic of tobacco color amblyopia. It will be seen that in cases of acquired color amblyopia, with isolated patches of color scotoma, even though central in character, Holmgren's and other tests for color detection are totally inadequate for conclusive service, as, while a central color scotoma might exist at the macula, there would still remain sufficient peripheral tissue at other portions of the fundus to enable the individual to retain good color comprehension for such general tests. The perimeter is the only reliable method for the detection of such acquired chromatic defects.

Fortunately for the detection of acquired color amblyopia, the same pathologic conditions interfering with the proper detection of colors also occasions proportionate form amblyopia. This fact draws attention to existing poor vision, which usually causes the patient to seek ophthalmologic advice, and the disclosure of his acquired color amblyopia naturally follows.

If color amblyopia exists in 4 per cent. of the male population, and can easily be detected by tests, and if transportation companies use colored signals, which, if not readily comprehended, are a menace to life and property, and if such companies *voluntarily* operate roads, boats, etc., for the transportation of the public and its property, why should they not be legally and absolutely required to operate such systems with as little risk to the public and its property as possible; why, at least, should they not be required to honestly ascertain whether those in whose hands are placed the guardianship of human lives can see well, hear well, and readily interpret colored signals.

Objections to eye and ear examinations frequently extend beyond corporate negation, to labor organizations, that, ignoring the possible sacrifice of human lives, insist on the retention of members, under all circumstances. Such brotherhoods frequently assume dictation as to methods of examination, as happened with the Delaware and Hudson Canal Co., where the union, notwithstanding great fairness and liberality by the company insisted on discarding the wool test, and the adoption of lamps, flags, etc., as practically used in everyday life, a method of examination which is altogether incorrect, unscientific, and unfair, both to employer and employee.

Corporations, unions, etc., frequently profess skepticism concerning accidents traceable to color amblyopia, thus willfully disregarding several authenticated historical contrary instances, to say nothing of the ill-defined records of transportation accidents, where, under the etiologic headings of "Carelessness," and "Undetermined Causes," is found ample opportunity for the occurrence of calamities possibly and justly attributable to color amblyopia, poor vision and hearing.

Notwithstanding the voluminous literature on the subject, authorities frequently ignore the importance of color amblyopia, producing in substantiation, examples of engineers, pronounced by ophthalmic experts to be color amblyopics, who have operated engines for

years without accident. The question is frequently asked: If color amblyopia is of such serious import, entailing preventable calamities, how may engineers guide trains safely for years, and then be pronounced congenitally defective by competent ophthalmologists? In the first place, there are many degrees of color amblyopia, already described, ranging from mere color insecurity to absolute color amaurosis. Therefore, an engineer may, by vicarious activity, often succeed fairly well in differentiating a limited number of colors, for perhaps years, and then lamentably fail, in chromatic detection, at an important moment, at a sacrifice of lives and property. Transportation companies, especially railroads, run with great regularity, enabling an engineer to usually correctly anticipate expected signals, at specified times and places, and causing him to slacken his speed for purposes of investigation when his anticipations are not realized. It must be remembered that all overrun signals do not necessarily imply accidents, and an engineer might misunderstand many signals without getting into trouble. Engineers, pilots, etc., are not alone in observing signals, being always assisted by firemen, officers, sailors, etc., who are much depended on for signal interpretation where self-consciousness of defective form or color vision obtains. Such employees habitually exercise all the tact, diplomacy and intelligence at their command, in concealing their shortcomings, and frequently acquire wonderful success in so doing. Color amblyopics frequently utilize some luminous object of known character, such as the moon, or a star, with which to compare the chromatic intensity of exposed signals, a procedure productive of much embarrassment and additional danger in cloudy and foggy nights.

Three colors are principally used as signals, viz., white, green and red, the first of which may be practically eliminated from this subject, as being almost invariably discernible by any one possessing even a fractional amount of color vision. Blue should also be mentioned as being the signal that a car is repairing on the track.

In railroad service, white indicates "safety," green "caution," and red "danger;" in maritime service red indicates the port side of a vessel, green the starboard side, while a white light hangs to the mast head, thus indicating her position and course. Unfortunately green and red are the colors most bewildering to the color amblyopic, but long practice and observation enables him to distinguish different degrees of *intensities* between these colors, which he has learned to call green and red, but which to us would possess entirely different significance could we see them through *their* eyes and *our* chromatic interpretation. The color amblyopic for red sees red as a color darker than red, perhaps brown, and sees green as a color lighter than green, perhaps gray. He may therefore see a difference in brilliancy between the two colors which he calls green and red, having heard them so denominated. In this way accidents are averted and he is supposed to have good color acuity because he *calls* them correctly.

It has been said that employees frequently express themselves as willing to be examined by signals as they are used in every-day life, but are unwilling to submit to the worsted and other tests in the office. They claim that such tests are unfair and needlessly technical, and that if they can name colors and objects on the track and water, this should be sufficient. Experience will prove, however, that such objections usually emanate from those feeling themselves insecure in discriminating colors and objects, or that the matter is championed by some union or brotherhood, as a policy of mutual protection. Corporations also advance the same argument, not wishing to be annoyed by internal dissensions with their employees, and being desirous of avoiding detail and expense. Many ultrapractical and unbiased men advance identical views and, indeed, the argument that the men should be practically tested with their tools, signals, habitual surroundings, etc., has a ring of common sense to it that appeals to many who should be better informed. The test proposed by such ultrapractical men and others is that men should be examined on the track or water, at usual distances, and just as if they were engaged in their ordinary vocations. This is no more fair and accurate in color tests than to give up examining vision by accepted printed types, in the office, and substituting therefor tests out of doors, by asking men if they can see a sign, a signal, a man, etc. Such tests would be ridiculed, for reasons unnecessary to mention, and it may be said that testing for colors in this loose and indefinite fashion is open to the same objections. The labor of such examinations to all parties concerned renders them impractical and inexpedient, when we consider that they must be made by day and by night, in both fair and inclement weather, under all possible circumstances, and will necessarily be subjected to many interruptions and much unfairness. Atmospheric conditions, such as clear, foggy, misty, rainy, snowy weather, escaping steam, the quality and character of the illuminant, the time of day, the thickness, quality and cleanliness of the lamp glass, the cleanliness and character of flags, etc., all have much influence on chromatic interpretations, even by those possessing good color appreciation, and these elements must be considered in arranging for so-called practical outside tests. It should not be forgotten that owing to the elimination of white from these tests, the matter becomes narrowed down to a discrimination between green and red, which the color amblyopic has by experience, tact, and color intensity appreciation, learned to do quite successfully under varying conditions, even though possessing no true appreciation of chromatic identity. These weapons he utilizes in such tests, and as only two colors are intrinsically concerned in his examination, he may, especially if he is a skilled guesser, emerge triumphant from an unscientific test, through which a defective man may win, or a safe man be condemned. The object of color examinations is *not* to ascertain whether an individual can *usually* discriminate between colors, but whether he can *always* and *invariably* do so, a fact which can only be definitely settled, with our present knowledge, by the comparing tests of Holmgren and others. It is an unfortunate coincidence that the very colors principally used as signals should be the ones implicated in color amblyopia. For this reason it has been suggested that other methods of signalling be used, such as forms, range lights on steamers, etc., and these suggestions are being carried out quite successfully on many roads.

It has also been suggested that as blue amblyopia is of very infrequent occurrence, blue and white should be made to occupy the important positions in signalling, now held by green and red. This has been objected to, as white already occupies a position of importance, and blue has not enough intensity and chromatic stability to make it a useful and important signal color. All things considered then, the methods now in use are the best at present at our command, but it is excessively important that those whose duty it is to

promptly and invariably interpret these colors should be able to do so promptly and unquestionably.

There are perhaps forty different tests for chromatic integrity, but after all the merits and demerits of the various methods have been discussed, it is quite generally conceded that the worsted test of Holmgren is the most accurate, simple, and reliable, although other tests are worthy of mention.

I will not undertake to recite the different steps of Holmgren's test, as they may be found in almost any reliable text-book on ophthalmology, but will make a few general remarks on the subject, important to be remembered.

The method consists in *comparing* colors by the use of some 150 shades of Berlin worsteds. Worsteds were selected as the agents of comparison for several reasons, viz.: They can be readily procured in all shades, can be used at once without preparation, are cheap, are equally colored, have no gloss and are not glaring, are easily packed, transported and handled, and are always ready for use.

As worsteds fade on exposure, it is better to have them renewed frequently, and they should be selected properly and accurately. For this reason Dr. Jeffries of Boston has made arrangements with an optician of Boston, to personally inspect wools which they sell at $2.50 a set. Indeed, in some European countries they go so far as to strongly recommend that wools used for these tests should be certified to—before selling and using—by an authorized committee, who shall produce standard colors derived from scientific and analytic spectral examinations. It is well, therefore, to avoid exposing the worsteds to the light as much as possible, keeping them in a box in a dark room when not in use.

Berger, Cohn and others believe that the application of external warmth to the eyes, temporarily relieves color amblyopia, which would lead us to be cautious in allowing men to protractedly cover their eyes with their hands, just previous to the test.

One eye should be examined at a time, as monocular color amblyopia is not impossible, and as one eye is sometimes disabled on a trip, by cinders, inflammation, etc., it is necessary for an employee to possess good chromatic perception in both eyes.

Those who test for color amblyopia should be sure of their own color sense.

Examinations should be universally made at least once in three years, once a year in those who excessively use tobacco or liquor, and immediately after accidents, severe illnesses, and when inattention to signals, or other occurrences tends to cast suspicion on the responsibility, vision, hearing or color perception of an employee. Examinations should include all those engaged in the active operation of means of transportation, such as station agents, telegraph operators, station baggagemen, engineers, firemen, hostlers, conductors, brakemen, train baggagemen, train porters, yard masters, switchmen, towermen, switch tenders, crossing flagmen, bridge foremen, section foremen, pilots, lighthouse keepers, street-car drivers, conductors, automobile drivers, and every employee of any kind of boat.

The object of the test should always be kept in mind, which is the *comparing* of the different worsteds with light green, purple and red test-skeins. The *names* of colors should be avoided, and it should not be forgotten that if an applicant fails to properly match the light green test-skein, he is color amblyopic, and that the matching of the purple and red skeins is simply of a confirmatory nature, and for the purpose of designating more accurately the *variety* of the defect. The light shade of green has been selected advisedly, and the test should not be expected to include all green gradations. The applicant *should match the sample* which will compel him to hunt for *light* shades of green, and lead him into a chromatic territory where color amblyopia will be exposed, a result which would not be accomplished by association with *dark* shades of green. An applicant easily loses sight of the exact nature of the test, and imagines that as the test is green, he is at liberty to select any green shade. He also frequently fails to keep in mind the original light green skein, and matches the last selected color, thus gradually and imperceptibly working into the darker shades, until the test becomes worthless. Should the applicant manifest a disposition to ignore or avoid the distinct design of the test, the colors should be remixed, and the examination begun afresh. He may even be instructed just how to proceed, by actual demonstration, as no harm is done thereby, for, if he is color amblyopic, he will ultimately fail in assorting the skeins, notwithstanding frequent instruction.

Color amblyopics do not invariably select improper colors; they frequently choose many correct skeins, but mix with them a proportion of confusion colors, thus establishing their defect. They usually adopt one of two courses: They may seek to conceal their defect by boldly and rapidly selecting skeins, thus usually quickly disclosing their infirmity; or they may approach the test slowly and guardedly, with many excuses, as to not being very well qualified in the selection of colors, etc. They show great hesitation in choosing the skeins, hold and twist them in their hands—especially the confusion colors—and then frequently throw them back into the pile and try again. They complain that they can not find worsteds exactly matching the skein, and exhibit much surprise when informed that the only requirement is to match the test skein as closely as possible. Condemnation should follow prolonged hesitation in doing so, as indicating a weak chromatic perception, quite as dangerous, if not more so, than pronounced color amblyopia accompanied with self-consciousness of the defect and skill in its concealment. Hesitating applicants are sometimes extremely troublesome, consuming much time and patience in examination, in order to at least satisfy the individual as to his fair and impartial treatment, and thus dissipate dissension amongst employees. Such men are prone to complain of a temporary debilitated physical condition, or weak eyes incident to long runs, or night work, under which circumstances re-examinations may occur, under confessedly good environments, as these men should, if possible, receive satisfaction, and be given every opportunity of proving the possession of good chromatic perception, as the support of a family and future prospects usually depend on the surgeon's verdict. Individual circumstances should, however, be entirely merged into the more important subject of public life and property, and no sentiment of pity should produce an impairment of judgment. Patience should be exercised in such examinations, and consultations with other surgeons and exhibitions of chromatic defects before companies or officials may be necessary to inspire confidence and respect in the examiner and resignation to his opinion.

One great objection to Holmgren's test is its apparent simplicity and ease of manipulation, which conveys to the mind of the laity the impression that it can be un-

dertaken with assurance by any medical man or even by non-professional employees, but it should be remembered that the test is not merely automatic. It *may* be frequently accomplished by uneducated laymen, but instances continually arise, taxing even an accomplished ophthalmologist to properly and equitably decide. It is often necessary to use the perimeter, test lenses, the ophthalmoscope, etc., to decide on scotoma, refraction, and many other points where color and form vision is tested, and to be a good otologist where a discrimination as to deafness is considered. Good surgeons may be and frequently are safe men to employ for eye and ear examinations, but I unhesitatingly assert that ophthalmic and aural surgeons are *better* qualified to do this work, and especially do I earnestly protest against entrusting such examinations to educated and uneducated laymen, who certainly can not be depended on to render a fair and skillful opinion either for or against the employment of men from a physical standpoint, and consequently must be quite as likely to condemn a sound as an unsound applicant. Brotherhood surgeons should be ineligible for such examinations, as the retention of their positions is optional with the organization, who might discharge them if they condemned many members, and they might not possess sufficient moral courage to withstand such financial pressure. The integrity of most surgeons is unimpeachable, but dishonesty may occur, and examining surgeons should be retained and paid by transportation companies, or at least the selection of the examining surgeon should be dictated by the company even if the men pay for such examinations themselves.

Tests for color and hearing may be witnessed by others, as harm can not accrue, if quiet and order is maintained, but tests for form vision should be made privately, as familiarity with the test-types is undesirable in those subsequently to be examined.

Ambition is inseparable from work, and employees in all avenues of labor hope to gradually advance from one position to another. If physical and incurable defects exist, rendering the ultimate fulfilment of these aims impossible, common humanity would indicate the advisability of an early acquaintance with such misfortunes, and the planning of some life work not inconsistent with incurable infirmities. For this reason physical examinations, incident to the subject under discussion, should be made at the inception of an applicant's career, and not delayed until the culmination of hopes and aspirations are about to be realized—as in the case of a fireman, about to become an engineer—when the development of the unfortunate truth dashes the cup of happiness from his lips.

Requirements for color and form vision and hearing on the water, where ships of all countries meet and pass, should be settled by international agreement, as maritime safety in this particular can obviously only be acquired by unanimous consent.

Dr. Jeffries says: "Color-blindness may be regarded by some as a curiosity, but if the color-blind individual be the engineer of a train running at the rate of a mile a minute, carrying passengers and freight, whose safely is dependent upon his knowing whether a switch is open or shut, or a draw up or down, or can instantly distinguish between a red and green light, then the communities' attention might possibly be aroused; or if another color-blind individual is a pilot of a steamer and the safety of lives and property is dependent upon his eye-sight, or the ability to distinguish between red and green, and a consequent knowledge which way the steamer is moving, then the mere curiosity part of color-blindness sinks into insignificance in comparison with the danger arising from it." Or as he again says: "Ask any superior officer of a road, if he would be willing to assume the responsibility when only colored signals alone were permitted, and a feeble light meant danger, a moderate light, attention or action, and a strong light-red color, clear. If he says no, tell him that these are the conditions under which every color-blind engineer is performing his duties. The absurdity is evident at once." "Ask the president or high official of a railroad if he would like to travel on a road where he knew that the engineer had poor vision or hearing or was color-blind. His answer should be indicative of his actions toward the necessity of a systematic examination of men holding such important positions."

Nov. 15, 1875, near Lagerlunda in Sweden occurred a terrible railroad accident, which was proven to be due to color amblyopia. This inspired Holmgren to make his investigations, which were the first noteworthy systematic and fruitful investigations made on this important subject. Since then the matter has been taken up in various parts of the world, with indifferent results. Sweden, Holland and England have taken quite an active part in the matter, as have also the legislatures in Alabama, Connecticut, Ohio and Massachusetts. Drs. Jeffries, Thomson and Oliver and others have worked energetically for good laws, but thus far their efforts have not been crowned with the success which they deserve.

Dr. Thomson states that there are in this country 180,955 miles of railroads giving employment to about 1,000,000 men. He corresponded with the managers of 129,970 miles of road and found that 54,465 miles used some system of color tests, 29,428 miles took *no* precautions, and 46,077 miles ignored his letters, which certainly left them well open to suspicion. It will thus be seen that many thousand miles of railroads are operated under a system which takes no precaution to ascertain the ocular condition of *even their locomotive engineers*. Assuming that even 3 per cent. of these men are color amblyopic, and that a still larger percentage have defective form vision and aural defects, it can be readily seen under what danger the public and its property, to say nothing of employees themselves, who are usually the first to suffer, are being daily transported, and these figures take no account of street railways and maritime transportation. These facts are appalling, and must be accounted for by unpardonable incredulity, indifference or impecuniosity on the part of transportation companies, or the intimate relationship frequently existing between some railroads and some legislatures, either of which should be overcome by united medical effort championed by some representative organization such as the AMERICAN MEDICAL ASSOCIATION. A united professional effort can accomplish much, as evidenced by the State of Kentucky, where the advertising quack is refused a spot in which to transact business, and the medical profession should insist that transportation employees be able to pass a reasonable and satisfactory examination by properly authorized and equipped medical men. If ophthalmologists and otologists desire to further the culmination of such ends, they must perform their part by simplifying their methods of examination, as far as is compatible with efficiency, and by being willing to examine large bodies of men, under contract, for a small fee. Perhaps later, when the laity is brought to a higher standard, more accurate examinations and higher fees will be possible.

I believe that under such circumstances, and under proper influence, transportation companies, and through them legislatures and Congress, may be brought to a realizing sense of their honest obligations to the public. I contend that such examinations will prove not only a desirable but an economic measure for transportation companies, and their managers will then, for a small expense, operate their companies under much less risk and danger of frequent litigation for damages, personal and otherwise. The consequences of one accident might easily pay for the eye and ear examinations of an entire system, and it is certainly true that judicial leniency will always be shown to transportation companies, able to show certificates of ocular and aural health of employees, where accidents have occurred possibly traceable to defects of these organs of special sense.

What has been said concerning the necessity for the possession of good chromatic perception by all employees actively engaged in actual transportation service, including street-cars and automobile drivers, applies also to the necessity for the possession of good form vision and hearing. The former should be tested by accepted test-types, and of these Snellen's are preferable, because reliable, and universally accepted as a standard. The latter should be tested by a good-sized watch, and by the voice test in a quiet room. The statement of employees as to their visual and hearing capacity should be absolutely disregarded, and reliance only placed on scientific and accurate means of investigation.

It will be necessary to adopt two standards, one for new and another for old employees. New applicants for work should possess normal eyes and ears, and be subject to no progressive ocular or aural disease, such as trachoma, cataract, neuritis, etc. Vision should equal 20/20 in both eyes, color perception should be perfect, and the low-spoken voice should be heard by each ear, at twenty feet in a quiet room, and a good-sized watch should be heard at three feet under similar circumstances. Temporary diseases need not debar an applicant, but he should not be accepted until such conditions have subsided, and normal conditions are re-established.

Old employees should be treated with all possible consideration, for reasons which must be manifest to any one thoughtfully approaching this subject, therefore certain concessions should be made to them, that are compatible with safe service. Color vision should be perfect and hearing should be good. They should not have any serious progressive eye or ear disease. Considerable latitude may be allowed in the matter of form vision. Full 20/30 vision should be required in one eye, 20/50 in the other, which is certainly a liberal concession. Old employees should be allowed and required to wear glasses when on duty, if lenses are necessary to produce the requisite form vision, but the expense of such refraction work should not be borne by the company, and the glasses should be inspected by the company surgeon, although employees should not be *compelled* to *consult* him for such professional service.

92 State Street.

PROFESSOR TERRIER of Paris leaves the Hôpital Bichat this year, as his term of hospital service expires (1883-1899), and assumes charge of the important surgical clinic at the Pitié vacated by Berger, who has recently been appointed professor of operative medicine. A souvenir medal was presented to Terrier as he took leave, by his students at Bichat.

A PRELIMINARY NOTE ON ANTIPNEUMOCOCCUS SERUM.

BY JOSEPH McFARLAND, M.D.
AND
CLARENCE WYMAN LINCOLN, M.D.
PHILADELPHIA.

Knowledge of pneumococcus infection and immunity, and the evolution of "antipneumococcus serum" have been of slow progress and along paths beset with many difficulties.

In 1880 Sternberg[1] discovered in saliva a diplococcus which, when inoculated into rabbits, produced fatal septicemia. To this micro-organism he subsequently—1885—gave the name "micrococcus Pasteuri."

Pasteur[2] subsequently rediscovered the same micro-organism, but neither he nor Sternberg seem to have recognized its importance in connection with croupous pneumonia. A. Fraenkel[3] observed the almost constant occurrence of the diplococci in large numbers in the rusty sputum of pneumonia, and cultivated it from several cases of pneumonia empyema, and one of meningitis. These and later observations[4] led Fraenkel to declare the diplococcus to be the pneumococcus, the cause of croupous pneumonia. Weichselbaum and Netter fully established his claims, and ever since the micro-organism has been called the "pneumococcus of Fraenkel and Weichselbaum."

The natural distribution of the pneumococcus has not been thoroughly worked out, and the micro-organism is best known to us as a resident of the mouth and respiratory tract in which it is found in greatest numbers in cases of fibrinous inflammation.

As was pointed out above, Sternberg and Pasteur first found the pneumococcus in saliva, Fraenkel in sputum. Its relation to the infectious processes succeeding pneumonia has been studied by many; thus Netter[5] found it in the serofibrinous exudate of pneumonic pleuritis; Zaufal[6], Netter,[7] Weichselbaum,[8] Bordoni-Uffreduzzi,[9] and others in the middle ear and mastoid process; Weichselbaum[10] first pointed out its relation to endocarditis and to the joint infections and periosteum. These observations have been repeatedly substantiated by large numbers of observations made by many competent students, and to the inflammatory conditions now known to be the result of the activity of the pneumococcus, have gradually been added parotitis, thyroiditis, orchitis, pharyngitis, conjunctivitis, meningitis, pleuritis, peritonitis, pericarditis, nephritic abscesses and others.

Netter[7] has given an excellent synopsis of the pneumococcus-infection as follows: Adults: pneumonia, 65.95 per cent.; bronchopneumonia—capillary bronchitis—15.85; meningitis, 13; empyema, 8.53; otitis, 2.44; endocarditis, 1.22, and hepatic abscess 1.22 per cent. Children: otitis media, 29 cases; bronchopneumonia, 12; meningitis, 2; pneumonia, pleuritis and pericarditis, each 1.

The etiologic rôle of the pneumococcus in pneumonia has been doubted by some because other micro-organisms are not infrequently found together with and occasionally replacing it. Of these the important are Friedländer's bacillus, the streptococcus pyogenes, the staphylococcus pyogenes aureus, rarely the colon bacillus, and commonly, since the great epidemic, the influenza bacillus.

It must be remembered, however, that the pneumo-

*Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

coccus is supposed to be specific for the croupous form of pneumonia, and the observations made to determine its presence are very convincing, for Netter,[7] in 82 autopsies, found the pneumococcus 82 times. Klemperer punctured pneumonic lungs 21 times and secured the pneumococcus 21 times; Weichselbaum obtained it in 94 out of 129 cases examined; Wolf in 66 out of 70, and Pierce[11] in 110 out of 121 cases. Weismayr[12] collected 39 cases of croupous pneumonia in which the pneumococcus was present in 34; of the remaining, 2 showed a mixed infection with the streptococcus and staphylococcus.

Netter found that, by inoculation into rabbits and mice, he was able to demonstrate the presence of the pneumococcus in the saliva in one-fifth of normal individuals who had not had pneumonia. In subjects suffering from pneumonia it was present in 82 per cent. of the cases. In cases having had pneumonia it was demonstrated in 60 per cent. in the first three months, in 89 per cent. in the second, third and fourth quarters of the year. During five years following the disease it could be demonstrated in the saliva in 80 per cent. of the cases, and after the fifth year in 67 per cent. The saliva has been found by him to be virulent from pneumonia, as long as twenty years after an attack of the disease, and the presence of virulent pneumococci there may explain relapses.

From the evidence before us at the present time, it seems safe to say that about 75 per cent. of the cases of true croupous pneumonia are caused by the pneumococcus alone, about 15 per cent. by that in combination with the influenza bacillus, streptococcus, staphylococcus, colon bacillus, etc., and the remaining 10 per cent.—a very liberal allowance—by various bacteria other than the pneumococcus.

The pneumococcus is present in greatest numbers in the early rusty sputum of pneumonia, and decreases in numbers in the later stages of the disease, when many of the bacteria are enclosed in leucocytes, and show by their staining and morphology that they are dead. They can be found throughout the whole pneumonic process, and as shown above may remain in the sputum and saliva for many years. The pneumococcus also occurs in the pus in such of the post-pneumonic inflammations as have already been mentioned, and Netter has shown us that in the great majority of fatal cases of pneumonia, the pneumococcus can be cultivated from the blood within the cavities of the heart.

Kohn[13] made a series of bacteriologic studies of the blood taken from the veins of the arm in croupous pneumonia and found the pneumococcus present in 21.8 per cent. The gravity of the case seems to bear a direct relation to its presence in the blood, for 18 patients who gave negative results recovered, 7 in whom the pneumococcus was found, died, while of 5 others in whom none were found in the blood, 2 died from an accidental streptococcus empyema. Only two patients, of all he studied, recovered after pneumococci were found in the blood, and these only after general pyemia and metastatic abscesses.

Animals vary in their susceptibility to pneumococcus infection. The pioneer experimenters first noted a general septicemia in the rabbit and, indeed, in rabbits and white mice the infection nearly always assumes that form, terminating fatally in from one to three days. In the cadavers of these animals there is comparatively little to see except that at the point of subcutaneous inoculation there is a large hemorrhagico-fibrinous exudate. The spleen may or may not be enlarged, and when enlarged may be hard and firm or soft. A little fluid may be present in the serous cavities. Frequently purulent pleurisy or pericarditis is found. The blood is usually firmly coagulated.

Birds, especially chickens and pigeons, are said to be immune; cats, dogs and sheep vary in their susceptibility, usually requiring intraperitoneal or intravenous injections to produce much effect. Guinea-pigs are not very susceptible; the young animals are probably more so than the full-grown. White rats usually succumb to large doses of virulent culture.

Too much attention must not be paid to the animal susceptibility, however, as it varies greatly with the virulence of the particular pneumococcus, which above all others is a micro-organism subject to natural and artificial variations in its virulence. Welch[14] found the most virulent cocci in freshly hepatized human lungs. The virulence rapidly declines on artificial culture-media, so that after a few generations the organism becomes harmless. Continued passage through animals may bring back the virulence of the attenuated pneumococcus, or intensify the strength of a feebly virulent one. Monti[15] and Pane[16] have increased its virulence by symbiosis with the proteus vulgaris and anthrax bacillus.

Pneumonia—i. e. pulmonitis—never follows subcutaneous, intravenous, or intraperitoneal infection with the pneumococcus. Injection through the thoracic wall into the lung was tried by Talamon, and a rabbit thus treated died of a fatal croupous pneumonia. Gameleia performed similar experiments on dogs and succeeded in producing a disease resembling croupous pneumonia of man and characterized by stages of red and gray hepatization and resolution. These cases recovered in about fifteen days. Experimental pneumonia was produced in the same manner in sheep, but was fatal.

From the facts thus stated we can establish: 1. The almost constant presence in croupous pneumonia, and its complications and sequelæ, of the pneumococcus. 2. The production of lesions similar to some of those of croupous pneumonia, and under certain conditions identical with those by inoculation into animals.

The pneumococcus and its morphology and culture are so well known that it would be an assumption to give them space in a paper whose space is limited.

The experimental production of immunity from pneumonia and the pneumococcus was begun by the use of filtered cultures, by F. and G. Klemperer.[17] It was found that when animals were injected with sterile filtered cultures they developed an immunity that lasted for about six months. They were also able to demonstrate in the blood the presence of a protective body which they called antipneumotoxin, which protected other animals from fatal pneumococcus infection. Their experiments include the prevention and cure of pneumococcus infection in animals, and the treatment of pneumonia in the human subject by the injection of blood-serum from immune animals. The experimental production of immunity to the pneumococcus is not at all difficult. Sternberg[18] found that attentuated cultures protected against more virulent ones; Klemperer, that filtered cultures afforded immunity as just described; Emmerich,[19] that infusions of the tissues of animals dead of pneumococcic infections were potent to immunize others. Belfanti[20] immunized animals by injecting into the ear vein 10 c. c. of a mixture of viscid sputa and distilled water kept on ice for twenty-

four hours and subsequently passed through a Chamberland filter; Foa and Scabia,[21] by the use of a glycerin extract from the blood of an infected rabbit.

It is now known that immunity can be secured by employment of live virulent germs, live attenuated germs, cultures killed by heat or by antiseptics, filtered cultures containing the products of metabolism, and the blood and juices of immunized and infected animals; the former probably because of antitoxic, anti-infectious or enzymic principles contained in the tissues.

The first suggestions of an antipneumotoxin came from the Klemperers, who claim to have found curative effects produced by the injection of the serum of the animals they immunized. The therapeutic value of these serums seem to have been very slight, for 8 c.c. of the serum were required to save the life of an infected rabbit, and it is little wonder that when an attempt was made to use the serum in human medicine, with a dosage of only 4 to 6 c.c., Mosney and others failed to experience the same good effects that the Klemperers claimed. Emmerich urges, in explanation of these failures, that the animals from which serums were received were not sufficiently immunized.

Hughes and Carter[22] probably received their inspirations from the Klemperers. They argued that the crisis in human pneumonia probably resulted from the presence of antitoxin in the blood which, if in excess, might be useful as a curative. In their experiments the serum of blood secured from a patient just past the crisis was injected into patients suffering from the disease. The results were not satisfactory and the treatment seemed to be dangerous.

Weisbecker[23] also treated 17 patients with pneumonia by serum taken from convalescents, and claims excellent results, with only 2 fatalities from complications. Huber and Blumenthal[24] tried the same thing in a number of infectious diseases, especially pneumonia, and 2 deaths occurred out of 14 patients noted.

The most recent and most interesting works on antipneumococcuus serum are those of Washbourne,[25] DeRenzi[26] and Pane,[27] that of the first named being most successful. Washbourne selected a pony and for a period of five months administered varying doses of pneumococci, at first killed by heat, then small quantities of virulent cultures, and finally large quantities of very virulent cultures. After a period, during which the animal was allowed to stand in order that the micro-organisms might disappear from the blood, the pony was bled. It was found that the serum was potent to protect a rabbit against ten times the fatal dose of virulent pneumococci in doses of .03 c.c. According to a nomenclature of strength adopted by him such a serum contains thirty-three units per cubic centimeter. Pane was not so successful, and of the serum which he produced, about 1 c.c. was necessary to protect a rabbit.

When live pneumococci are brought into contact with the antipneumococcus serums, it is observed that agglutinations form and the contour of the micro-organisms becomes less distinct than normal. In some cases they may be dissolved, so that the reaction between the serum and bacterium resembles the well-known Widal phenomena.

The fact intimates, as would be expected, that the serums of Washbourne and Pane belong to a class known as anti-infectious rather than antitoxic serums, and exert a direct destructive action on the bacteria.

The work and the results of the more recent writers differ from that of the Klemperers, in that the latters' serums being made by the use of filtered cultures—toxin—was really an antitoxic serum, while the newer preparations are made by immunizing the animal to live virulent cultures and are anti-infectious.

The pneumococcus produces very little separable toxin, and the symptoms of the disease are more the result of the local pulmonary distress than of systemic involvement. The pneumococcus, however, is a micro-organism which does not remain local in the lung, but is apt to enter the blood-stream with resulting metastasis and probable septicemia. For such a condition an anti-infectious serum is distinctly indicated, while an antitoxic serum would possibly be less desirable unless exceptionally active. According to the studies of Pane and Isaeff, the antipneumococcus serum exerts no effect on the separable toxins of the pneumococcus, being limited in its action to the destruction and solution of the bacteria themselves.

The direction which our experiments have taken has coincided with that of Washbourne and Pane. Because of its large size and the considerable quantity of blood which it furnished, the horse was the animal selected. After establishing its soundness and health by the usual tests, a course of gradually increasing doses of the pneumococci was carried out, the resistance of the animal being so increased that 100 c.c. of a very virulent culture could be tolerated. This dose was repeated a number of times at intervals of about a week, and when the desired condition was attained and the possibility of micro-organisms remaining in the blood had disappeared, the horse was bled from the jugular vein, the serum separated and preserved with trikresol. This serum was found on careful testing, to be about the same strength as that secured by Pane, and not so strong as that of Washbourne. It is hoped that the serum will be of use in the therapeusis of croupous pneumonia, exerting its effect on the pneumococci engaged in the pneumococcic processes in the lung, and that the immediate effects of its use will be the reduction of temperature, strengthening of the pulse, production of an early crisis, and above all the prevention of the frequent accidental metastatic inflammations so common in the disease.

The result of the use of the serum in human medicine we hope to make the subject of a future paper.

In the various septic processes caused by the pneumococcus, such as meningitis, purulent pericarditis or pleurisy, periostitis, the rare cases of diplococcus angina, the offer of a specific treatment would come as a very welcome gift.

In the few therapeutic observations that have been made by other writers, varying success is reported, but enough cases have been treated to give a very hopeful outlook for the future of serum therapy in pneumonia. The most important observations made are as follows:

DeRenzi,[28] in 1895 and 1896, studied, comparatively, 13 cases of pneumonia treated without the serum, with 3—23 per cent.—deaths, and 14 cases treated with the serum, with 2—14 per cent.—deaths. In the latter series, one was *in articulo mortis* when treatment was begun, and the other had renal and arterial disease apart from the pneumonia.

Cooke[29] treated two patients, Spurnell[30] and Fanoni[31] one each with antipneumococcus serum from different sources, with good effect and ultimate recovery.

Pane[32] treated 9 cases with an average of 20 c. c. of antipneumococcus serum each day. All of these recovered except one, in which the treatment was begun late and an insufficient quantity of the serum administered.

Washbourne[33] treated 6 patients, some of them very severe, with his serum, and had excellent results, all of his cases recovering.

BIBLIOGRAPHY.

1. Am. Jour. Med. Sci., July, 1881.
2. Compt. Rendu, xcii, p. 159.
3. Deutsche med. Woch., 1885, p. 31.
4. Zeitsch. f. Hyg., 1896, x and xi.
5. Bull. et mém. de la Soc. Méd. d. Hôp. de Paris, 1889, 3d Series, vi.
6. Prager Med. Woch., 1888 and 1889.
7. Compt. Rendu, 1889.
8. Wiener klin. Woch., 1888.
9. Centralbl. f. Bakt., etc., vii, 90.
10. Wiener klin. Woch., 1888, 35 and 36.
11. Boston Med. and Surg. Reporter, Dec. 2, 1897.
12. Zeitsch. f. klin. Med., xxxii.
13. Berliner klin. Woch., Dec. 14, 1896.
14. Baumgarten's Jahresberichte, 1891.
15. Atti della Acad. med. de Roma, ii, 1889, 7.
16. Riforma Med., 1894.
17. Ber iner klin. Woch., 1891, Nos. 34 and 35.
18. Studies from the Biologic Laboratory of Johns Hopkins, Balt., 1882.
19. Münchener med. Woch., 1891, No. 32.
20. Riforma Med., 1892, No. 126
21. Gaz. med. di Torino, 1892, p. 421.
22. Therapeutic Gaz., Oct. 15, 1892.
23. Münchener med. Woch., Feb. 15 and 22, 1898.
24. Berliner klin. Woch., August 2, 1897.
25. British Med. Jour., Feb. 27, 1897. p. 510.
26. Il Policlin., Oct. 31, 1896 (Supplement).
27. Centralbl f. Bakt., xxi. 17 and 18, p. 664, May 29, 1897; Gaz. degli Ospe. e delle Clinici, Jan. 30, 1898.
28. Il Policlin., Oct. 31, 1896 (Supplement).
29. British Med. Jour., May 22, 1897.
30. British Med. Jour., April 17, 1897.
31. N. Y. Med. Jour., May 7, 1898.
32. Gaz. degli Ospe. e delle Clin., Jan. 30, 1898.
33. British. Med. Jour., Dec. 25, 1897.

Therapeutics.

Local Treatment of Diphtheria with Scarlet Fever.

The *Semaine Med.* of November 11 quotes a Polish confrère, Malinowsky, that he has found the following formula extremely satisfactory for spraying the throat and nasal cavities for ten to twenty seconds every two hours in scarlet-fever diphtheria: creosote and thymol, āā, .50 gm.; camphor and turpentin, āā, 25 gm. The false membranes become detached in twenty-four hours. General treatment is continued as usual.

Antidiphtheria Serum in Whooping-Cough.

Gilbert writes to the *Rev. Med. Suisse Romande* that the success of antidiphtheria serum, in some cases of whooping-cough coinciding with diphtheria, induced him to try it for the former alone. Nine children with severe whooping-cough were thus treated and the effect was prompt and decided. The disease was much attenuated and shortened. The coughing spells decreased from twenty to thirty in the twenty-four hours to three or four, and in ten days the specific cough had vanished. Ten cubic centimeters were injected.

Treatment of Ulcer of the Stomach by Absolute Rest.

To secure good results in the treatment of gastric ulcer, the vomiting must be stopped; the pain must be relieved; the hyperchlorhydria must be cured or made to temporarily disappear, so that the ulcer may proceed to cicatrization.

To secure these results absolute physiologic rest must be enforced, which will prevent gastric fermentation and putrefaction. The muscular fibers of the stomach being placed at rest, there is at first diminution soon followed by a suppression of gastric secretion.

Under the influence of complete rest the dilatation of the stomach lessens and the walls contract and resume their vigor. Observation has proved that complete suspension of gastric feeding is possible and that patients can endure without inconvenience from fifteen to twenty days, if rectal feeding is resorted to.

Peptonized enemata prepared according to the following formula may be used:

Milk	℥iiii
Yolk of egg	ii
Peptone	ʒxii-xvi
Tinct. opium	m. x

Not more than ℥viii should be given at one feeding and it should be administered luke-warm.

A half hour or an hour previous to giving a rectal feeding, an enema of ℥viii of cold water should be given to the patient. Four enemata should be given daily, which is sufficient nourishment for a patient confined to bed.

It is an interesting fact that intestinal absorption is better, the less the stomach functionates. The duration of the treatment will depend on the gravity of the symptoms. The resumption of buccal feeding must be slow, and progressive. The cessation of rectal feeding must also be gradual.

Very Extensive Burn in a Child Treated by Large Saline Injections.

Patel, in the *Lyon Medical*, reports the case of a child, aged 2½ years, who had a burn of the second degree, involving more or less, both arms and legs, face and trunk. The general condition was bad, the pulse was imperceptible, and the child unconscious. Caffein, alcohol, bouillon, and milk were given. On the third day 250 c.c. of saline solution were injected, and on the fourth day the child became for the first time conscious. Between the fourth and twenty-second days six similar injections were given. Until the twentieth day he improved in every respect, but on the twenty-second his general condition was not so favorable, and on the twenty-fourth day he died. At the necropsy the lungs alone presented appreciable lesion—diffuse catarrhal pneumonia. The great improvement after the first four injections, and the survival of the child for nearly a month seemed to be due to the serum. After reviewing the work done to elucidate the cause of death in extensive burns, the writer comes to the conclusion that it is due to an auto-intoxication. Consequently, once the period of shock is passed, the treatment should be directed to freeing the system of the circulating toxin, and for this saline injections answer well. Due attention should also be paid to the emunctories, so as to still further favor the elimination of toxins.

Prescriptions for Tonsillitis.

℞ Salol ..... gr. xxx
Olei amygdal. expressed ..... ʒi
Syrupi ..... ʒvii
Aquæ ..... ʒxix
M. Sig. To be taken in 3 doses during the day.
—*Squibbs Ephemeris.*

℞ Pulv. opii deod ..... gr. ii
Tinct. verat. viridi ..... m. viii
Hydrarg. chloridi mitis ..... gr. ii
Olei anisi ..... m. i
Sacchari lactis, q. s.
M. Make into 20 tablets. Sig. One every hour for adults.
—*Newcomb: Medical Record.*

ACUTE FOLLICULAR TONSILLITIS.

℞ Guaiacol ..... ʒii
Olei amygdal. expressi ..... ʒii
Apply on the inflamed tonsil with a throat brush. Give internally.
℞ Potassii bromidi ..... ℈iv
Sodii salicylatis ..... ʒi
Tinct. opii decd ..... ʒi
Cascara cordial q. s. ..... ʒi
M. Sig. Teaspoonful every four hours in water.
—*Ingals: Chicago Clin. Review.*

FOLLICULAR TONSILLITIS.

℞ Acidi trichloracetici ..... gr. iii
Sodii carbonatis ..... gr. vii
Potassii iodidi ..... gr. xv
Glycerini ..... ʒiii
Aquæ dest ..... ʒv
M. Sig. After incising the tonsils paint with the above.
—*Gaz. deg. Osp. e del Clin.*

ACUTE TONSILLITIS.

℞ Tinct. aconiti ..... m. viii
Liq. ammon. citratis ..... ʒii
Syrupi auranti ..... ʒiss
Aquæ dest. q. s., ad ..... ʒii
M. Sig. Two teaspoonfuls every three hours for a child of five years.
—*Ashby: Medical News.*

℞ Sodii salicylatis ..... ʒiv
Syrupi acaciæ ..... ʒiv
Aquæ cinnamomi ..... ʒiv
M. Sig. A dessertspoonful every two or three hours.
—*Columbus Med. Jour.*

An Ointment for Sciatica.

℞ Olei terebinthinæ
Olei gelsemii, āā.....3v
Ceræ albæ.....3ii
Unguenti simp.....3xl
M. Sig. To be applied to the painful part.

Riforma Medica.

Excessive Sweating of the Hands.

℞ Acidi borici.....gr. v
Sodii boratis
Acidi salicylici, āā.....gr. xv
Glycerini
Alcoholis diluti, āā.....3i
M. Sig. To be rubbed on three times a day.

Dysmenorrhea, Menorrhagia of Puberty and Uterine Atony.

℞ Ferri et ammon. citratis
Pulv. ergotæ, āā.....3i
Extracti kola, q.s.
M. et div. in pil. No. l. Sig. From two to six to be taken daily at the menstrual periods.

Riforma Medica.

Lutaud's Pills for Amenorrhea.

℞ Ferri et potassii tart.....gr. xlv
Extracti artemisiæ
Extracti absinthii, āā.....gr. xxx
Aloes socotrin.....gr. xv
Olei anisi, q. s.
M. et div. in pil. No. xxx. Sig. One pill to be taken before every meal.

Riforma Medica.

Elixir of Terpin Hydrate for Bronchitis.

The following formula is recommended by Crinon:
℞ Terpini hydratis.....gr. lxxx
Glycerini
Spiritus, āā.....3iiss
Mellis despumat.....3ii
Tinct. vanillæ.....m. lxxv
M. Sig. Two to four tablespoonfuls a day.

Enemata.

The following standard formulas for enemata are quoted from "Sickness and Accidents" by Martin W. Curran.

ENEMA OF ALOES.

℞ Aloes.....gr. xl
Carbonate of potassium.....gr. xv
Mucilage of starch.....3x
Mix and rub together. This is used in cases of ascarides of rectum.

ENEMA OF ASAFETIDA.

℞ Asafetida.....gr. xxx
Distilled water.....3iv
Rub the asafetida in a mortar with the water gradually, so as to form an emulsion. This is carminative and antispasmodic, as well as laxative.

ENEMA OF COLOCYNTH.

℞ Extract of colocynth.....3ss
Soft soap.....3i
Water.....Oi
Mix. An efficient cathartic.

ENEMA OF OPIUM.

℞ Tinct. opii.....3ss
Mucilage starch.....3ii
Anodyne, exhibited in cases of severe diarrhea and dysentery.

ENEMA OF TURPENTIN.

Oil turpentin.....3i
Mucilage of starch.....3xv
Administered in cases of ascarides.

NUTRIENT ENEMA.

℞ Beef tea.....3iv
Hydrochloric acid.....m. x
Glycerite of pepsin.....3ii

Nutritive enemas should contain material for artificial digestion, as the rectum is not an organ of digestion, and, to secure rapid osmosis, should have an acid reaction. To the above formula, if the rectum is irritable, add 10 to 20 drops of tincture of opium.

Glycero-Phosphate of Soda in Functional Neuroses.

This substance is derived from glycerin-phosphoric acid, a product of the decomposition of lecithin. Max Kahane confirms the favorable reports which others have made of the combination. He found that when it was administered to patients suffering from functional disturbances of the nervous system, it seemed to exert a refreshing stimulating effect on the same, but did not benefit the separate symptoms. His formula was:

℞ Sodii glycerino-phosph.....gm. xv
Aquæ dest.
Aquæ naphæ, āā.....gm. lv
Syrupi aurantii cort.....gm. xx
M. Sig. A teaspoonful three times a day in a little water.

—*Klin. Therap. Woch.*

The Treatment of Diabetic Coma.

An increasing knowledge of the dietetics of this disorder teaches the profession that strict adherence to antidiabetic food favors the development of coma. While the exclusion of carbohydrates lessens the amount of sugar in the urine and thus overcomes one symptom of the disease, it is doubtful, says the *Medical Review*, if the diabetes is improved by the lessening of the sugar, in the majority of cases. Greater benefit is to be derived from lessening the carbohydrates than from their total exclusion. The presence of acetone in the urine should at once direct the attention of the physician to the possibility of the development of coma. Even when this is not noted, the peculiar odor of new-mown hay in the breath or a marked lassitude in the patient should be sufficient to direct the attention to this possibility. These symptoms should be followed by an abrupt change from an antidiabetic diet to a strict milk diet. Saline purgatives should be administered to clear out the intestinal tract, as it is possible that diabetic coma may have its origin in fermentations in the intestinal tube. Sodium bicarbonate should be administered in large doses, to overcome the lessened alkalinity of the blood. If coma develops, the following solution should be injected into the colon:

Sodii chloridi.....3i
Sodii bicarbonatis.....3iiss
Aquæ dest.....Oii
If this is not followed by some relief, properly sterilized, should be given hypodermically; or in cases of great urgency it may be thrown into the veins.

Antistreptococcic Serum in Cerebrospinal Meningitis.

Charles P. McNabb believes that: 1. The antistreptococcic serum has a decided stimulant effect on the nerve centers in meningitic coma, but the same results might follow a warm saline hypodermoclyster. 2. It probably increases phagocytosis, and in this way has some antidotal effect on the diplococcus intracellularis. 3. It probably prevents purulent infection of the exudate, and thus lessens the danger in all cases in which the patients survive the first three or four days. 4. From observations of these cases it is hoped that an antidiplococcus intracellularis meningitidis serum can be produced which will have a decided effect in controlling the terrible toxemia of meningitis, and that the associated effect of antistreptococcic serum after the second day will assist in preventing streptococcic infection of the exudate.

Treatment of Hepatic Insufficiency.

According to the *Medical Review of Reviews*, Gilbert and Weil have studied two cases of "lesser diabetes" in which there were present an enlarged liver, digestive glycosuria, urobilinuria and hypoazoturia, together with indicanuria, a picture suggestive of hepatic insufficiency. All these disappeared under administration of hepatic extract. In another case, a consumptive with enlarged liver had no other symptom than indicanuria, which was persistent. Under the use of hepatic extract this symptom disappeared, to return when the extract was discontinued.

Current Medical Literature.

Titles marked with an asterisk (*) are noted below.

New Orleans Medical and Surgical Journal, December.

1.— Municipal Control of Prostitution. Isadore Dyer.
2.—*Chloasma Uterinum. E. A. Blount.
3.—*Fibroids of Uterus, Treated with Thyroid Extract. C. Jeff Miller.
4.— Case of Aphasia in Typhoid Fever in Which the Cause is Doubtful. Early Pneumonia in Typhoid Fever, its Prognosis and Treatment. J. M. DaCosta.
5.— Two Cases of Lead Poisoning with Treatment of Each. Arthur V. Meigs.

Journal of Cutaneous and Genito-Urinary Diseases (N. Y.), December.

6.—*Multiple Benign Sarcoid of the Skin. C. Boeck.
7.— Operative Routes to the Seminal Vesicles. Percy R. Bolton.
8.— Report of Case of Salicylic Acid Dermatitis with its Histology. Martin F. Engman.
9.— A Castration: A Failure. Edward L. Keyes, Jr.

Modern Medicine (Battle Creek, Mich.), October.

10.— Physiologic Effects of Light. J. H. Kellogg.
11.— Significance of Dental Decay. J. H. Kellogg.
12.— Febrile Albuminuria. Howard F. Rand.
13.— Report of Case of Traumatic Hemiplegia. Dudley Fulton.

Obstetrics (N. Y.), November.

14.—*Hydrorrhea Gravidarum and Hydrosalpinx. F. Stanley Cowles.
15.— Some Practical Experience in Asepsis and Antiseptics in Obstetrics. Douglas Ayres.
16.— Report of Case of Puerperal Sepsis and What It Teaches. Chas. H. Glidden.

Clinical Review (Chicago), December.

17.— Clinical Lectures on Etiology, Pathology, Diagnosis and Treatment of Tumors. A. H. Levings.
18.— Lectures on Gunshot Wounds. C. B. Nancrede.
19.— Landry's Paralysis. Henry M. Lyman.
20.— Clinical Lecture on Obstetrics and Gynecology: Mental and Nervous Derangements in Obstetric Practice. Denslow Lewis.
21.— A Rhino-Laryngologic Clinic. Otto J. Stein.

Canadian Journal of Medicine and Surgery (Toronto), December.

22.— Some Incidents in the Life of John Hunter, Anatomist and Surgeon. A. Primrose.
23.—*Significance of Bovine Tuberculosis and Its Eradication and Prevention in Canada. J. G. Adami.
24.—*Inquiry into Etiology of Chronic Bright's Disease. A. G. Nicholls.
25.—*Great Lakes as a Health Resort. E. Herbert Adams.
26.—*Craniectomy for Microcephalic Idiocy. W. J. Wilson.

Sanitarian (Brooklyn, N. Y.) December.

27.—*Next Step in Work of Refuse and Garbage Disposal. W. F. Morse.

American Journal of the Medical Sciences, December.

28.—*Appendicitis. Maurice H. Richardson.
29.—*Pathology of Paralysis Agitans. H. C. Gordinier.
30.—*Prognosis in Heart Disease. Beverly Robinson.
31.—*Management of Surgical Injuries to Ureters. Beverly McMonagle.
32.—*Nature of Paramyoclonus Multiplex. A. C. Brush.
33.— Parotitis in Old Age. H. J. Walcott, Jr.
34.— Critical Summary of Surgical Treatment of Ptosis. M. L. Foster.

Pennsylvania Medical Journal (Pittsburg), November.

35.— Aortic Regurgitation With Remarks on Flint's Murmur and Paroxysmal Sweating. Alfred Stengel.
36.— Physiology of Circulatory Diseases, With Remarks on Treatment with Digitalin. Henry Beates, Jr.
37.— Case of Leucocythemia. F. J. Patterson.
38.— Report of Case of Resection of Liver for Removal of a Neoplasm, with Table of 76 Cases of Resection of Liver for Hepatic Tumors. W. W. Keen.
39.— What Can We Promise from Operative Treatment of Cancer of Uterus? E. E. Montgomery.
40.— Remote Results in Artisan's Palsy. F. S. Pearce.

Brooklyn Medical Journal, December.

41.—*Modified Procedure for Radical Cure of Varicosities of Internal Saphenous Vein. R. S. Fowler.

St. Paul Medical Journal, December.

42.—*Natural Right to a Natural Death. Simeon E. Baldwin.
43.—*As to Effect of High Altitudes on Weak or Diseased Heart. Frank Donaldson.
44.— Nutritional Diseases of the Cord. W. A. Jones.
45.— Calculus Anuria of Ninety-Six Hours' Duration. James H. Dunn.

Medicine (Chicago and Detroit), December.

46.—*Milk as a Carrier of Infection. C. O. Probst.
47.—*Malignant Tumors of Eye. William H. Wilder.
48.—*General Surgical Anesthesia and Anesthetics. Ernest J. Mollish.
49.— Treatment of Syphilitic Stenosis of Larynx by Intubation. Thomas C. Evans.

Buffalo Medical Journal, December.

50.—*Pus in the Pelvis. Herman E. Hayd.
51.—*Administration of Anesthetics. Frank W. McGuire.
52.— Nervous Dyspepsia. B. C. Loveland.
53.— Plea for More Frequent Use of Atropin in So-Called "Ophthalmias." Lucian Howe.
54.— Note on Spermatocele, with Case. J. Henry Dowd.
55.— Tests for Albumins. Byron H. Daggett.

American Journal of Surgery and Gynecology (St. Louis, Mo.), November.

56.— Extensive Operation for Cancer of Face. J. F. Binnie.
57.— Treatment of Dislocation of Shoulder-Joint; Tubercular Abscess of Cheek; After Effects of Frost Bite. William C. Dugan.
58.— Some Practical Points in Treatment of Diseases of Women. Emory Lanphear.
59.—*Most Successful Treatment of Spina Bifida. W. O. Henry.
60.— Case of Adenosarcoma in a Negress. August Schachner.
61.— Diagnosis and Treatment of Uterine Fibromata. Milo Buel Ward.
62.—*New Method for Reduction of Strangulated Hernia. H. C. Owen.
63.— Vesico-vaginal and Vesico-uterine Fistulæ and Their Cure. Herman E. Pearse.
64.— Case of Large Tumor of the Brain, Producing Few Symptoms save Ocular Changes, with Remarks on the Value of Double Optic Neuritis as a Sign of Brain Tumor. James Moores Ball.
65.— Clinical Notes on Iodoform, Hydrogen Peroxid, etc. R. D. Mason.

Texas Medical News (Austin), November.

66.— From the Standpoint of a Man of Science. Frederic W. Simonds.
67.—*Preliminary Iridectomy for Extraction of Senile Cataract. H. L. Hilgartner.
68.—*Chronic Tetanus Neonatorum. R. A. Goeth.

Southern Practitioner (Nashville, Tenn.), December.

69.— Bubonic Plague. Deering J. Roberts.
70.— Rupture of Quadriceps Extensor Tendon; Extra-Uterine Pregnancy and Operation for. R. E. Fort.

Toledo Medical and Surgical Reporter, December.

71.— Cure of Hemorrhoids, Fistula, and other Affections of the Rectum, by Office Treatment Without Operation. James A. Duncan.
72.— Treatment of Hemorrhoids. O. Hasencamp.
73.— Treatment of Migraine. J. D. Ely.

Columbus Medical Journal, November 5.

74.— Pathology of Typhoid Fever. David N. Kinsman.
75.—*Physicians' Prescriptions. Starling Loving.
76.—*Case of Intestinal Obstruction. Charles H. Merz.

North Carolina Medical Journal (Charlotte), November 20.

77.— Hemorrhoids and Their Treatment. John R. Irwin.
78.— Lithemic Cystitis and Its Treatment. G. Wight.

Pediatrics (N. Y.), December 1.

79.—*Vulvovaginal Catarrh. Francis Huber.
80.—*New Clavicle Splint. Henry Ling Taylor.
81.— State Care of Indigent Crippled Children. Arthur J. Gillette.
82.— Indigestion in Infants and Children. James H. Taylor.
83.— Case of Congenital Macrodactylism. Fielding Lewis Taylor.

Philadelphia Medical Journal, December 2.

84.—*Report of Fatal Case of Trichinosis Without Eosinophilia, but with Large Numbers of Eosinophilic Cells in the Muscle Lesions; with Remarks on the Origin of Eosinophilic Cells in Trichinosis. W. T. Howard, Jr.
85.— Appendicitis. J. O. Conor.
86.— Temperament and Disease, or "The New Humeral Pathology." Albert E. Sterne.
87.— Case of Cerebral Hemorrhage Following Labor. Edmond M. Lazard.

New York Medical Journal, December 9.

88.— Case of Hourglass Stomach (Stomach *en bissac*). Operation. Recovery. Chas. Greene Cumston.
89.—*Early Diagnosis of Aneurysm of Arch. William Porter.
90.— Fibro-lipomatous Tumor of Epiglottis and Pharynx. E. Fletcher Ingals.
91.—*Ventral Fixation of Uterus without Laparotomy. Frank Suggs.
92.—*Dry Heat of High Degree as a Therapeutic Agent. (*Concluded.*) C. E. Skinner.
93.— The Army Ration. Chas. Smart.
94.— Potentialities of the Physician. Kenneth W. Millican.
95.—*Report of Case of Membranous Dysmenorrhea. Robert E. Coughlin.
96.— Puerperal Fever versus Antistreptococcic Serum. Edward F. Brennan.

Medical News (N. Y.), December 8.

97.—*Bacteriology of Yellow Fever Once More. G. Sanarelli.
98.— Some Peculiar Phases of Typhoid Fever. E. G. Janeway.
99.—*Typhoid Fever as Seen in Bellevue Hospital. A. Alexander Smith.
100.— Varicocele, Movable Kidney, Mammary Carcinoma, Recurring Appendicitis. Charles McBurney.
101.— Large Perineural Fibroma Involving the Entire Sciatic Nerve-Sheath. Rudolph Matas.

Maryland Medical Journal (Baltimore), December 9.

102.—Bladder Troubles in Old Men and the Treatment. J. Howell Billingslee.
103.—*The Medical and Chirurgical Faculty's Contribution to the Welfare of the State. Eugene F. Cordell.
104.— Notes on Recent Scientific Literature. W. L. Howard.

Cincinnati Lancet-Clinic, December 9.

105.— Morphine Poisoning? H. V. Sweringen.
106.—*Tuberculosis: Duties of the Hour. H. H. Spiers.

Boston Medical and Surgical Journal, December 7.

107.—*Tumor of Pituitary Body. L. G. Walton and F. E. Cheney.
108.— Special Preparation of Patient, Surgeon, Instruments, Sutures, etc., and Points in Technic of Operations for Hernia. J. Coplin Stinson.
109.—*Acute Universal Eczema, with Special Reference to Its Etiology. Albert E. Brownrigg.

110.— Case of Chronic Cyanosis without Discoverable Cause, Ending in Cerebral Hemorrhage. Richard C. Cabot.
111.—*Early Sign of Tuberculosis. Thomas F. Harrington.

Medical Review (St. Louis, Mo.), December 9.

112.—*Some Points in Pathology of Appendicitis, with Specimens. John Young Brown.
113.— Further Observations on Treatment of Abdominal Viscera through the Colon. Fenton B. Turck.
114.— Progress in Rectal Anal Surgery. Samuel G. Gant.
115.—*The Drainage Canal. Harold N. Moyer.

Medical Record (N. Y.), December 9.

116.—*Electrostatic Currents and the Cure of Locomotor Ataxia, Rheumatoid Arthritis, Neuritis, Migraine, Incontinence of the Urine, Sexual Impotence and Uterine Fibroids. Wm. James Morton.
117.—*Nature of Expert Testimony, and Defects in Methods by Which it is Now Adduced in Evidence. W. A. Purrington.
118.—*Differential Diagnosis between Chronic Joint Disease and Traumatic Neurosis. Reginald H. Sayre.

AMERICAN.

2. **Chloasma Uterinum.**—This condition is treated here by Blount as due to irritation of the terminal branches of the sympathetic, and as being mainly caused by slowing of the blood current from any cause whatever. The diagnosis is usually easy; only two other conditions can be confused with it. The first, pityriasis versicolor, is a parasitic disease accompained with itching; the other is the large pigmented macular syphilide, which is usually confined to the posterior cervical region, and accompanied with a syphilitic history or other evidence of specific disease. The prognosis should be guarded, as unless the exciting cause is fully removed treatment may fail, and even when removed it may persist for months. The author uses a prescription of corrosive sublimate with diluted acetic acid and borax in water, applied on compresses every three hours. One very important thing is to remove all mental disturbances.

3.—See abstract in JOURNAL, December 9, p. 1493.

6. **Multiple Benign Sarkoid of the Skin.**—Boeck describes a case of a rare condition to which he gives the above name. It consists of swollen lymph-nodes, with slight augmentation of the white corpuscles, and a wide-spread, somewhat symmetric, eruption of firm nodules on the head and extensor surfaces of the trunk and extremities, ranging in size from a hemp-seed to a bean, and involving the whole skin, and movable with it. On the scalp only yellowish outlines are visible. The color of the nodules is bright red, becoming darker and finally yellowish or brown. Slight scaling occurs in older lesions. They show a tendency to peripheral spreading and central depression. On the face they have a peculiar appearance with blue centers and yellow borders. They finally disappear, leaving as a rule loss of substance in the skin, which may be white on the face, yellow on the back and darker at the periphery on the legs. There were no ulcerations, nor exudation. The disease seems to be benign and disappears under arsenic, or perhaps spontaneously. Histologically the new growth may be described as perivascular sarcomatoid tissue built up by excessively rapid proliferation of epithelioid connective-tissue cells in the perivascular lymph spaces, with little addition of other varieties. The tumor soon begins to degenerate. A few giant cells of sarcomatous type were found.

14. **Hydrorrhea Gravidarum and Hydrosalpinx.**—Cowles describes a case of hydrorrhea gravidarum occurring in a woman two months after confinement, which at first suggested appendicitis, and operation was prepared for, but the discharge of water gave full relief. The same patient had suffered during confinement from attacks of hydrorrhea. He suggests that in this case the tubal glands may have had their part, giving rise to the location and symptoms which suggested a wrong diagnosis. At any rate, there was an extension of inflammatory action to the tubes. He discusses, somewhat at length, the differential diagnosis of inflammatory conditions existing in the right iliac region in women, and expresses the opinion that a thorough exploration of the pelvic cavity by vaginal and rectal touch is essential before operating.

23.—See abstract in JOURNAL, September 2, p. 621.

24. **Etiology of Chronic Bright's Disease.**—The substance of Nicholl's paper can be best given by reprinting his conclusions, as follows: 1. Bacteria are constantly passing from the intestine into the liver, and thence into the general blood-stream, even in a normal animal. 2. The different forms of Bright's disease are to be regarded as various stages in the same general process, there being a unity pervading the whole pathologic picture. 3. All forms of nephritis are due, in the immense majority of cases, to infective agents; the acute, to the usual specific germs of the primary disease, and the chronic, as a general rule, to the bacillus coli, though other germs may sometimes be concerned. 4. Acute interstitial inflammation and subsequent connective tissue hyperplasia are the key-note of the process; this is, however, preceded by parenchymatous degeneration. 5. The point of invasion by the bacillus coli is the gastro-intestinal tract; for other germs it may be various. 6. The liver and mesenteric glands are the first barriers of defense; and the endothelial cells of the capillaries and secreting tubules of the kidney have the power of ingesting bacteria, this being an attempt at inhibition and elimination.

25. **Great Lakes As a Health Resort.**—Adams calls attention to the value of the Great Lakes as a health resort, affording the advantages of sea travel and change and variety of climate, with many conveniences which are not so afforded by more extended trips.

26.—See abstract in JOURNAL, September 9, p. 671.

27.—Ibid, November 18, p. 1292.

28.—See abstract in JOURNAL, June 10, p. 1314.

29. **Paralysis Agitans.**—Gordinier elaborately reports and illustrates the findings in a case of this condition, and discusses the pathology as shown by this and the recorded cases in the literature. He concludes that a careful review of the pathologic changes reported in the twenty-four cases of Parkinson's disease examined by modern methods will convince the most skeptical that it can no longer be included among the purely functional disorders. That it has a distinct pathologic basis seems positive from the following facts: 1. In all cases examined there was a uniformity and constancy in the results of the anatomic findings. 2. These involved the blood-vessels, with a proliferation of the nuclei and thickening of the walls of the blood-vessels, forming, by confluence, patches or areas of perivascular sclerosis; pigmentation with degeneration and consequent atrophy of nerve-cells and fibers, the cells resting in dilated cellular spaces. 3. The spinal cord was in all cases most affected, and in a few it was the only part of the cerebrospinal axis possessing pathologic changes, these being most marked in the gray matter and in the lateral and posterior columns of the cervical and lumbar enlargements. 4. The lesions, although similar in character, decrease in intensity brainward, the brunt of the affection being confined to the spinal cord. 5. The changes, while resembling those found in senility, differ from them in intensity, and in the presence of typical patches of perivascular sclerosis, in the absence usually of general arteriosclerosis, and in being associated with a group of characteristic clinical symptoms which often appear long before senility, and when once begun continue to invade, without cessation or intermission, little by little the entire body, producing a clinical picture as distinct and characteristic as that of any disease organic in nature with which we are acquainted. Most observers who have advanced theories in regard to its pathology have started on the basis of the symptoms, hence, the erroneous results. It is evident that we have three characteristic changes: perivascular sclerosis with its predilection for the dorsal parts of the lateral and the posterior columns; degenerative changes of the multipolar nerve-cells, and the general hyperemia as evidenced by multiplication, thickening and local dilatation of blood-vessels, together with cellular infiltration. The two characteristic symptoms, tremor and rigidity, are, Gordinier holds, both due to one and the same cause, viz., an irritation from the presence of an increased amount of neuroglia in the posterior columns, causing excitability of the reflex collaterals of the posterior nerve roots branching around the ventral corneal cells, and resulting in an increase of their normal rhythmic discharge of energy, producing first the tremor and then the rigidity.

30. **Prognosis in Heart Disease.**—Robinson's paper is not easily abstracted, covering as it does a wide range of conditions and treating them in a detailed manner. The reader is referred to the article itself.

31. **Surgical Injury of the Ureters.**—McMonagle reviews

the different operations for the management of surgical injury of the ureters, and reports five cases he operated on by different methods. His conclusions are summed up as follows: 1. Surgical injuries to the ureters during extensive operations on the pelvic and abdominal viscera are comparatively frequent, and are found to occur most often during vaginal hysterectomies. 2. These injuries can often be prevented by especial care, both before and during the operation. 3. In uretero-vaginal fistula, great care must be taken to have the urine aseptic before undertaking an operation for repair. 4. In this fistula also repair through the vagina should be first tried. Failing in this, extraperitoneal implantation into the bladder is to be preferred. 5. When injuries occur during abdominal operations, immediate repair by anastomosis or implantation should be undertaken. If the condition of the patient is low, implantation on the skin should be done with a view to future operation. 6. When anastomosis or bladder implantation can not be accomplished, implantation in the other ureter or bowel is preferable to implantation on the skin. 7. Tying the end of the ureter, with a view to atrophy of the kidney, is not advisable. 8. Nephrectomy should only be practiced as a last resort. 9. The results of the different methods of uretero-anastomosis and bladder implantation have been about equally successful.

32. **Paramyoclonus Multiplex.**—The author's attention was directed to this subject by the occurrence of three cases of this peculiar spasmodic condition first described by Friedreich in 1882. He reproduces with these, six more cases from other authorities, and on examining their symptoms and causation concludes that we have in this a condition which, in the absense of heredity, does not contradict its being of hysteric origin; its etiology is that of hysteria, as are also its symptoms. If we are not to classify this condition as hysteria, we are compelled to assume that it is at least at times hysteria.

41. **Varicose Veins.**—Fowler describes an operation which has lately been adopted by him for the operation on varicosities of the internal saphenous vein. It consists in ligation and section of the vein at the saphenous opening and complete excision through two one-half-inch incisions of the entire internal saphenous vein below the knee. His technic, after the first incision and ligation and identification of the vein below the knee-joint, is as follows: "A skin incision one inch in length is made down to it and a piece of catgut passed around it for purposes of traction. It is isolated as far in an upward direction as possible by introducing the long slender handle of a scalpel along its course beneath the skin. This is facilitated by putting the vein on the stretch. The vein is strongly attached so that it gives way at the uppermost point. The isolation of the vein is then carried on in a downward direction as far as may be. It is put on the stretch. This causes it to become prominent for the whole length of the leg. A second incision one inch in length is made over the course of the vein a few inches below the juncture of the middle with the lower third of the leg, so as to escape pressure from the shoe-top on any scar which might result. The vein is brought into this incision, isolated as far as possible in a downward direction and attracted so as to cause it to give way at the lowermost possible point. Isolation is then carried in an upward direction as far as may be. We now have two small incisions through each of which protrude three or four inches of the internal saphenous vein. It is still held by some few attachments at a point midway between the two incisions. By alternately attracting first one of the free ends of the vein and then the other, these points of attachment are gradually loosened and the entire vein removed, as one would withdraw a catheter from the bladder. A half-inch incision is carried down to the external saphenous vein midway between the knee and the ankle. The vein is isolated as far in an upward direction as possible, and traction put on it until it gives at the highest possible point. The same procedure is repeated in a downward direction and the vein withdrawn. Hemorrhage from the torn tributary veins is as a rule inconsiderable and stops spontaneously. In any event the pressure of the dressing is amply sufficient to control it. The skin incisions are closed with linen subcuticular sutures, and dressed. The entire limb is bandaged firmly from the toes up and ended with a spica of the thigh and pelvis, in order to securely retain the dressing over the site of ligation at the saphenous opening. In addition, the limb is placed on a Volkmann splint and securely bandaged to it. At the end of one week the sutures are removed and the patient is allowed to walk about with the extremity snugly bandaged." In addition to the excision of the internal saphenous veins, it will be seen that the external saphenous is also similarly excised.

42. **Right to Die.**—This paper is the one which has aroused so much discussion in the lay press, being the annual address before the American Social Science Association at Saratoga last September, by Judge Baldwin of Connecticut. It has been editorially commented on in our columns. (See JOURNAL, September 16, p. 739.)

43. **High Altitude and Heart Disease.**—His attention having been called to the subject of the effect of high altitude in diseases of the heart, by a recent paper by Babcock (*Med. News*, July 15; JOURNAL, July 22, ¶ 129, p. 219), Donaldson takes issue with his second proposition, that the ill-effects of low atmospheric pressure in some forms of cardiac disease are explicable on the theory of acceleration of venous flow and consequent quickening of the pulse. He does not find that there is an acceleration of the venous flow, and believes that the cause of the dyspnea and cardiac failure are diminished pressure of the thin walled right heart and the thinner walled veins of the chest. In very high altitudes the want of oxygen is the great cause of dyspnea, but in ordinary ones of from 3000 to even 10,000 feet, the hemoglobin can take up sufficient oxygen for its needs. In these altitudes Donaldson believes there is, in spite of Babcock's opinion, a real danger to every weak and diseased heart.

46. **Milk As a Carrier of Infection.**—The possibilities of milk being a carrier of infection are, according to Probst: 1, those that may come from contamination from outside, as in the instance of unclean vessels; 2, those due to infection before it leaves the cow. Tuberculosis is the first and most important thing considered, and the author suggests that the only way to prevent infection will be by legal regulation, frequent inspection, license to sell, remodeling of cow stables and full co-operation of dairymen. He suggests that it is not necessary to slaughter all cattle found tuberculous, as with change of pasture, plenty of fresh air, etc., they may recover.

47.—See abstract in JOURNAL, May 27, p. 1174.

48. **Surgical Anesthesia and Anesthetics.**—Mellish's article is completed in this issue, and he sums up his conclusions in thirty-five propositions, the chief of which are: Chloroform kills by its action on the circulatory system, ether by that on the respiratory. In anemia of the medulla the patient should be placed head down. In sudden paralytic dilatation of the right heart, as after several deep inhalations of chloroform, the heart should be rhythmically compressed by squeezing the chest and the feet lowered, artificial respiration being constantly maintained. Anesthetics interfere with metabolism, causing degenerative changes, especially of the vital organs. Chloroform is probably most dangerous in this respect. Laboratory experiments are to be distrusted unless agreeing with clinical experience and studies. Cocainizing the nasal mucosa to antidote certain bad effects of anesthetics is not commendable. Body warmth must be kept up during anesthesia, but very high room temperature is not desirable and may do harm. Ether is no more liable to produce nephritis than chloroform, probably less so. Most of the bad effects of ether, and to some extent of chloroform, on the kidneys, are due to faults of technic and preparation. Nausea is best prevented by preparation and after-treatment favoring normal physiologic tonus. Gastric lavage after anesthesia, followed by vinegar inhalation, will generally modify or prevent it. The danger from hemorrhage is no greater, if as great, with ether than with chloroform. The safety margin is much less with chloroform than with ether. Patients should be well fed with digestible and non-bulky food, to within a few hours before operation, and should be allowed water to within two or three hours of it. Shock will be less and elimination of anesthesia more rapid. For the same reason water should be given freely after anesthesia. Routine methods should be avoided, the agent being selected to meet the special needs. Any anesthetic, but especially ether, should be used cautiously in the presence of respiratory complications. Further facts as to nitrous oxid are required, but

its general use is not practicable. Most inhalers are bad; the Esmarch chloroform mask is the cleanest, safest and best; the open method, however, in giving ether is not always practicable. The tongue forceps is a barbarous instrument; the mouth-gag is often dangerous by forcing the tongue against the pharynx. No person who has not a wholesome fear of anesthetics can be trusted to administer them; beware of one who believes any anesthetic perfectly safe. Patients who greatly fear anesthesia are most likely to give trouble, while intelligent and educated ones are easiest. The pupillary reflexes constitute the best guide to presence or absence of surgical anesthesia, but the pulse, pupils, respiration, and color of the skin should all be carefully watched from the beginning of anesthesia until consciousness is fully restored. Noisy breathing generally means faulty administration. The minimum amount consistent with the requisite anesthesia should only be used. Compression of the phrenic nerve properly done will usually control vomiting, etc. The use of drugs preceding and during anesthesia should be avoided if possible, and, if needed, they should be used with the greatest care; other means should be depended on for the prevention of syncope and to resuscitate. Mixtures are generally less safe than single anesthetics. Partial or talking anesthesia is advisable in some cases, but should be avoided in delicate and sensitive patients, especially for prolonged operations, unless taken quietly and with apparent abolishment of pain sense. Lastly, anesthesia and anesthetics should be thoroughly treated in medical colleges, and students instructed practically in the same.

50. **Pus in the Pelvis.**—Pus in the pelvis should be dealt with on general surgical principles, and evacuated as soon as diagnosed with certainty. The question of diagnosis and the methods of relief are discussed by Hayd, who argues against any too general adoption of the vaginal method, and answers some of the objections to the abdominal operation.

51. **Administration of Anesthetics.**—McGuire advises a few days' prior preparation with thorough examination of the heart, lungs and urine, clearing out of the bowels, etc. He insists on the qualifications of the anesthetizer and advises chloroform in all pulmonary and renal diseases, those of the blood-vessels, in abdominal distension, in cardiac lesions unless the compensation is disturbed, in cases of severe pain, in operations by gas light, in obstetric cases, in cranial, laryngeal and abdominal operations, in those of the face and mouth, in children and old people, in emergency cases where speed is required, in patient's known to bear ether badly, and where the anesthetizer is skilled. Ether may be given in preference where chloroform is badly borne, with an unskilled anesthetizer, in extreme prostration, in collapse following loss of blood, in chronic alcoholism, and where there is evidence that chloroform affects the heart or vessels. No anesthetics should be given in operations for repair of the soft parts following labor, as they are apt to produce alarming hemorrhage. The details of anesthesia are gone over with special reference to the least amount of anesthetic required, the effects on the circulation, respiration, etc. He objects to too much use of stimulants. In conclusion he suggests that the anesthetizer's position is not appreciated and his remuneration is inadequate.

59. **Treatment of Spina Bifida.**—Henry holds that not all the cases of spina bifida require injection or other operative treatment. Some can be cured by compression, but the large majority require some radical treatment, and in skilful hands will give not less than 70 or 80 per cent. of cures. Excision is more scientific and successful than injection, and when operation is required the age of the child is not to be considered. When paralysis or other nervous symptoms occur, no matter how old the patient, benefit may accrue from operation.

62. **Strangulated Hernia.**—Owen recommends the aspiration of the bowel in strangulated hernia, with a small trocar, and injection of 1/4 gr. of morphin sulphate and 2 drams of water, then with elevating the hips and flexing the thigh, taxis will easily reduce the hernia. He has performed the operation twice with success, and believes that many cases of strangulated hernia, otherwise irreducible, can be rendered reducible by puncturing the tumor with the smallest sized trocar or exploring needle that would allow the exit of incarcerated flatus.

67. **Preliminary Iridectomy in Cataract.**—Hilgartner reports two cases of senile cataract in which, prior to operation for their correction, he performed an iridectomy. He gives his reasons for this procedure as: 1. The operation in two steps renders each one shorter and less complicated. The presence of germs must always be counted on, and the swifter the operation and the less violence to tissues the better on this score. 2. The maturing of an unripe cataract is frequently hastened. 3. The patient is gradually educated to the carefulness necessary after the more serious operation of the lens extraction. 4. During the extraction there is no hemorrhage from the iris. 5. The iridectomy offers a larger space for the introduction of the cystotome, and freer opening for the escape of lens and cortex. 6. Division of the traumatism, the iris wound having already healed, leaves only the corneal incision to unite. Moreover, an eye after having recovered from one operation stands subsequent operations better. 7. Although this division of the operation is peculiarly adapted to complicated cases, it is contraindicated in no form of cataract. In regard to authoritative practice, it may be mentioned that A. von Graefe employed preliminary iridectomy in unfavorable cases, or when a former operation had terminated in suppuration. The disadvantages are not serious. The inconvenience of two operations is not serious, nor is the lengthening of the course of treatment. The patient's chance of seeing ought not to be jeopardized in order to let him get through quicker and with less inconvenience.

68. **Tetanus Neonatorum.**—Goeth describes a condition of chronic tetanus in new-born children, occurring in the fall season with warm days and cold nights, which generally ends in recovery, but which has not been largely noticed in the text-books, probably because it is not so prevalent in the Northern States. He does not see how the tetanus bacilli can have anything to do with it, as he is careful to observe antisepsis in his midwifery cases. He asks more particulars from practitioners who observe this disease, as to the following points: How long does the disease last, if ever less than three weeks? Does it always begin with the ninth day of the child's life? Does antitoxin do any good? Is any other treatment successful? He himself has used only symptomatic treatment, mainly asafetida and brandy.

75. **Physicians' Prescriptions.**—Loving notices the errors and bad practices in relation to prescribing medicine, and points out what he thinks are the proper remedies. He does not believe in the successful change from the old to the metric system in prescriptions.

76. **Intestinal Obstructions.**—The case reported by Merz is one of apparently complete intestinal obstruction, with fecal vomiting, which was cured by an injection of one-half gallon of warm soap-suds, the patient being in the knee-chest position and then inverted and thoroughly shaken. In fifteen minutes a large quantity of fecal matter passed without pain. He gave instructions to administer a dose of castor-oil, but the patient's sons, whose zeal outran their discretion, repeated the earlier treatment, much to the patient's disgust but with no bad results. He thinks this method was first recommended by Jonathan Hutchinson, who advised it to be done under anesthesia, and while he, himself, admits the risk, he prefers it to operative procedures when there are no localizing signs of obstruction. Probably if any damage had been done it could have been afterward relieved by operation.

79. **Vulvovaginal Catarrh.**—Huber's paper is devoted to gonorrheal vulvovaginal infection in infants, and its diagnosis and treatment. He calls attention to the medicolegal importance of the subject, and an early recognition of the nature of the discharge. All cases should be carefully examined bacteriologically. For details of treatment, the reader is referred to the article. The disease is rather intractable and a too early cure must not be expected.

80. **A New Clavicle Splint.**—The splint described by Taylor consists of two convex, pear-shaped, hard-rubber pads, fitting into the depression in front of the shoulders, and joined by a rigid adjustable bar, curved forward so as not to touch the chest. Each pad carries a buckle above and a strap below, and the back piece to which it is buckled consists of a stiff piece of sole leather lined with chamois and a layer of padding, and provided with straps at the upper corners and buckles at the lower, and large enough to overlap the posterior borders of the scapula an inch or more and reach from the root of the

neck to well below the axilla. When applied, the splint is set as wide as possible and buckled, forcing the shoulders back by backward pressure of the pad in front, on the humerus, and forward pressure of the large piece behind on the inner margin of the scapulæ. The adjustment is easy, according to needs, and a wider splint is usually required than is ordinarily expected at first. The splint allows use of the arm during most of the treatment. A sling is required only the first few days, sometimes not at all. The apparatus acts as an independent shoulder girdle, assuming the function of a clavicle.

84. **Trichinosis.**—The recent publication of T. R. Brown and Gwyn in which they regarded eosinophiles of high grade—42 to 68.2 per cent.—as a constant and therefore important diagnostic sign of human trichinosis is contradicted in a case reported by Howard, who failed to find the eosinophiles in the circulated blood, though present in the muscular lesions and the mucosa of the stomach and intestines.

89. **Aneurysm of the Arch.**—The symptoms of aneurysm of the aortic arch are here reviewed by Porter. There is only one that is positively characteristic, and that is the presence in the chest of a pulsating tumor other than the heart, beating with it and expanding in every direction at the same time as the heart beat and at least as forcibly. The laryngeal symptoms are also noticed, and he remarks that pressure on the recurrent nerve does not necessarily produce aphonia. The phenomenon of compensatory arytenoid movement is now sufficiently established. The laryngeal image is normal in appearance and function, excepting when there is paralysis of one recurrent nerve, most frequently the left, the corresponding cord may be seen in the cadaveric position, while the opposite cord may cross the median line and phonation is possible, and voice changes occur. The only subjective symptom at this stage may be a more or less constant laryngeal cough. A bilateral adductor paralysis may occur when only one nerve is involved, due, it is suggested, to overstimulation and failure of the well side. Dyspnea, though not constant, is important and may be due to motor paralysis or pressure directly on the trachea and bronchi or on the bronchial plexus. Pain in the region of the aorta is often remarked as characteristic, but Porter has not so found it. A more important and just as frequent symptom is pain in the region of the fifth or sixth dorsal vertebra. As regards auscultation, two points should be remembered: There may be heard in the left interscapular space an arterio-diastolic murmur or a systolic murmur due to the beating of the aneurysmal sac on the left bronchus. The second point is the presence of a systolic sound or thud in the brachial artery, synchronous with the systole of the heart. Porter mentions two methods of examination which he has devised. One is the conveyance of the impulse from the aneurysm through a distensible bougie, and its measurement, which he has learned has also been devised by Schnell in 1889. Another method which he thinks is original with him is the auscultation of the aneurysm through a solid esophageal sound, which promises to be an improvement, not only in better conduction but also in a clearer definition, over the ordinary auscultatory methods.

91. **Ventral Fixation of Uterus Without Laparotomy.**—Suggs' method is operating through the vagina and opening Douglas' pouch, breaking up adhesions and treating local conditions, and then bringing down the fundus through the opening and placing two silkworm gut sutures in the anterior uterine wall and scarifying. The sutures are caught with artery forceps and the fundus pushed back into the peritoneal cavity. The patient is now placed in the Trendelenburg position. A long curved canula with a strong flexible trocar, which may be thrust out several inches, and having an eye near the point for threading, is now threaded and the point drawn back, leaving a free loop hanging down by the instrument. Into this loop is placed one of the silkworm gut suture ends and twisted. The canula is now guided directly upward and forward by two fingers, through the vaginal incision toward the abdominal wall, which can be reached when pressure from without is made. The trocar is now thrust through, carrying the silk with it, which is now unthreaded and in its turn draws the silkworm suture through. The other suture ends are likewise drawn through, their proper or relative positions being maintained, and the opposite ends tied together with a small piece of gauze. The sutures remain in the usual time and the vaginal incision is closed with one of fine catgut. This method, which is contraindicated in the presence of pus, has, he claims, the advantages of a simple vaginal incision over a laparotomy and those of a ventral fixation over other methods.

92. **Dry Heat.**—Skinner's article is concluded in this issue, but he promises to report and discuss the results of the treatment in other disorders in a future paper. His summary of present results is as follows: Hot air is a pain-relieving agent of unequaled value in those conditions where its application is indicated and possible, because of its very constant effectiveness, rapidity of action, and the absolute absence of deleterious after-effects. In rheumatism, at least, its action is so profound in connection with judiciously chosen drugs that it may almost claim a positive curative power of its own, and may certainly be said to be the most powerful contributing agent we know of. Many cases can not be cured by drugs without it, and in any case the victory over the ailment is much hastened and the victim maintained in comfort during the attack. On the other hand, we must remember that it appears to be rarely if ever capable of overcoming the disease without the aid of drugs. It is capable of stimulating tissue repair to a remarkable degree, as is demonstrated by its effect on sprains and on at least many cases of intractable varicose ulcers. It is capable of most happily influencing septic inflammations of serous membranes, as is shown by its action in peritonitis and pleurisy. It will many times at least give us the power of economizing nervous energy by relieving pain and other more or less dangerous conditions in pneumonia, thereby enabling us to refrain from sedatives and cardiac stimulation, and the nervous energy we may thus save for the patient will sometimes be sufficient to tide him over a crisis by which he would otherwise be overwhelmed. We can not expect hot air or any other one measure to do everything. It will do much and its powers are exerted in a direction in which we have hitherto been lamentably deficient; hence its addition to our armamentarium will enable us to increase by a large percentage the sum total of our power over disease. The capabilities which it has so far manifested, and we have as yet only begun to investigate them, are sufficiently weighty to justify belief that dry heat of high degree is destined to become in the near future a therapeutic agent of as great popularity as it possesses diversified applicability.

95. **Membranous Dysmenorrhea.**—Coughlin reports a case of membranous dysmenorrhea occurring in a virgin aged 31, which the author publishes as exceptional. He calls attention to the possibility of mistakes in taking the discharged mass as the product of conception.

97. **Bacteriology of Yellow Fever.**—Sanarelli's paper is a vigorous attack on his critics. He maintains that it has been proven that his bacillus icteroides is undoubtedly found in patients with yellow fever, and in the bodies of those who have died from it, and that it can be isolated from practically every case. He further holds it as proven, in spite of the criticisms of Reed and Carroll and others, that it is found only in this disease and that no one has ever succeeded in finding it in any other. He claims that the fatty degeneration of the liver is peculiar to this disease and that this effect of the germ distinguishes it from any other pathogenic agent. Finally, he holds that it reproduces in animals all the symptoms and anatomic lesions which can be considered characteristic of yellow fever in human beings. [His article is strongly polemic and is open to objection as to its tone. In the "Correspondence" in this issue of the *Medical News*, Dr. Sternberg replies in a dignified manner, stating that he is still open to conviction, but giving his reasons for not as yet accepting Sanarelli's views.—ED.]

99. See abstract in JOURNAL, November 11, p. 1229.

106. **Tuberculosis.**—Spiers is not a believer in the microbic theory of tuberculosis, and holds that the death-rate of the disease is due to the suspension, as he calls it, of atmospheric influences, which prepares the soil for the bacillary growth.

107. **Tumor of Pituitary Body.**—The case here described by Walton and Cheney was that of a physician, aged 26, who had peculiarities of growth suggestive of congenital defect of the pituitary glands. Attacks of migraine, accompanied by hemianopsia had existed so long as to at first exclude an or-

ganic basis. Later there was a persistent defective visual field involving the side of one eye only, with a later extension to the nasal field of the other eye, and further we have a color defect in the otherwise unaffected side of one eye. During the progress of the case there occurred loss of sexual power, diminution of vision and optic atrophy, these symptoms with persistent headaches fixing the diagnosis of tumor. Toward the end appeared vasomotor symptoms, somnolence, physical weakness and lack of mental grasp. The pathologic findings showed the tumor, which had caused the disappearance of the olivary process and portions of the sella turcica, to be a perithelial angiosarcoma. The authors end their paper as follows: 1. Congenital peculiarities in growth resembling those of acromegaly, but occurring in otherwise healthy individuals, may point to structural defect of the pituitary gland, a defect sometimes furnishing the starting-point for new growth later in life. 2. The occurrence of pituitary tumor without definite symptoms of acromegaly does not necessarily disprove a connection between this organ and this disease, for the persistence of even a small amount of healthy gland tissue is sufficient fairly to carry on the function of the pituitary body. 3. The combination of general symptoms of new growth with optic atrophy and loss of temporal field of vision makes the diagnosis of pituitary tumor almost certain. 4. Hemiachromatopsia is not necessarily of central origin.

109. **Chronic Universal Eczema.**—Brownrigg reports and discusses a case of acute universal eczema in a chronically insane patient, relieved by intestinal evacuation and antisepsis. He believes that this form is always dependent on intestinal derangement due to increased putrefactive changes in the small intestines. The toxins thus given off irritate the kidneys in their excretions, and probably form the irritating factor in their irritation of the skin.

111. **Early Sign of Tuberculosis.**—Attention is called here to a widely dilated state of both pupils, due apparently to some irritation, possibly of the sympathetic, caused by some blood change associated with very early tubercular infection. The author offers it as the result of his individual observation, and asks for further testimony in regard to it by other observers.

112. **Appendicitis.**—The principal points here referred to by Brown are the importance of thoroughly blowing out of pus from the abdominal cavity, with peroxid of hydrogen, the complete removal of the appendix, leaving no stump, the dangers of iodoform gauze for drainage, and the through-and-through closure method.

115. **The Drainage Canal.**—Moyer, noticing the article by Phillips, opposing the drainage canal, which appeared in the *Review*, argues that the effects of this opening will be to better the condition by largely diluting the sewage which is now poured down the Illinois River and pumped through the Illinois and Michigan Canal. The effect of the drainage canal will be simply the addition of a large amount of pure water from Lake Michigan, and while it may not be completely germ-free, it will be much better than the present flow.

116. **Electrostatic Currents.**—Morton finds the electrostatic current applicable in cases of locomotor ataxia, rheumatoid arthritis, urinary incontinence, sexual impotence, neuritis, neuralgia, migraine and uterine fibroids, of all of which he reports cases in which it has been used with benefit. He also has found it useful in ordinary rheumatism, in all forms of gout, synovitis, enlarged prostate, anemia and chlorosis, and especially in neurasthenia and melancholia, and all conditions in which a state of malnutrition exists.

117. **Expert Testimony.**—This article, by a legal author, treats of certain points in expert testimony which are yet in an unsettled condition. He notices the arbitrary rules of evidence and the defects of our system of eliciting the truth, also the fact that judges who have so often contemptuously disregarded expert testimony are themselves really experts in law and acting as such and are liable to the same personal disabilities as other experts. He notices the lack of standards of competency and the fact that counsel often embarrass experts, unintentionally and otherwise, in telling the facts as they know them. Prejudice of interest as it acts on lawyers and witnesses is also noticed, and he admits in conclusion that there are fundamental sources of error and uncertainty at the bottom of all our difficulties with expert testimony, and no consideration of remedies is adequate that disregards them.

118.—See abstract in JOURNAL, November 11, p. 1229.

FOREIGN.

British Medical Journal, November 25.

A Modern View of Cancer. GILBERT BARLING.—The subjects discussed and treated in Barling's paper are three: the supposed increase of cancer mortality, the possible infectious nature of cancer, its surgical treatment. As regards the first of these, he is inclined to agree with Newsholme that the apparent increase is not a real one, but is due to more accurate death certification. In former years many cases were certified as due to indefinite causes, now attributed to cancer. As regards the infection question, in a general way he favors the opinion that cancer is the local expression of the irritation induced by bodies from without, and he discusses the recent works on the subject, admitting that the positive cause of the condition has not yet been shown. In this respect, however, it is like syphilis, the infectiousness of which no one doubts. The operative treatment is discussed at some length from a hopeful point of view. He commends Halsted's method of thorough excision of all lymph glands in the line of cancer infection, though stating fully its disadvantages.

Incidence of Cancer. ARTHUR JACKSON.—The parasitic theory of cancer is discussed by Jackson, who points out some of the conditions under which it seems to especially abound. Assuming that cancer is due to parasitic infection, he argues that excessive and irregular blood-supply seems to favor its growth, though not so necessary for its origination. He suggests that there may be some special properties or substances in the blood that have something to do with it. He believes that something in the nature of a specific will be discovered some day, and the facts now known as to the beneficial action of thyroid and certain toxins indicate this.

Treatment of Surgical Shock by Large Doses of Strychnin. J. BASIL HALL.—The author reports two cases in which death seemed imminent during operation, but postponed or prevented by the injection of 1/4 gr. of strychnin, and another case of double amputation of the leg in a railway accident in which 1/5 gr. of strychnin seemed to have a like good effect. He urges a bolder and more systematic use of this drug in these cases, and believes that better results will follow such a course.

Lancet, November 25.

Influence on Health of Chemical Preservatives in Food. ALEXANDER G. R. FOULERTON.—Boric acid and formic aldehyde are the two preservatives now used to any extent in milk and other food products, and their action on the economy is here considered by the author. First noticing the direct action of the preservatives on the tissues of the body, he gives tables made up from those of Chittenden, Mayberry and Goldsmith and his own studies, and as regards the effect of boric acid and borax on the tissues, and on the health of the consumer, and gives a summary of the experiments of Chittenden and Gies showing that experimental evidence does not throw any special light on the possible effects on man. He next gives a table of published cases of poisoning by boric acid, showing that doses about equivalent to the amount which an invalid adult on milk diet might take if the preservative were present in the proportion of 1 part to 2000, are capable of producing in certain cases serious toxic symptoms in the adult, and it must be assumed that a proportionately larger amount taken by an infant might also be dangerous. The subject of formic aldehyde is only commenced in this article, which is to be continued.

Red Coloration of Feces Simulating Presence of Blood. ALFRED H. CARTER and C. A. MCMUNN.—The importance of blood in the fecal discharge makes it unnecessary to be precise as regards its presence, and the authors here mention three cases in which there was a simulated appearance of blood, which chemical examination proved was not present in any form. The appearance was due to a pigment closely related to stercobilin, the normal pigment, though differing in some slight particulars. He thinks this difference due to the incompletely metabolized condition in which it was excreted, and the color was due to exposure to the air acting on the chromogen of the pigment.

New Method of Skin-Grafting. THOMAS H. KELLOCK.—The author adopts, for skin grafting, a method in which he takes a piece the whole thickness of the skin, surrounded by a narrow margin of epithelium. The wounds due to the removal of the grafts may be sutured or left to granulate.

Indian Medical Gazette (Calcutt), November.

The Laveran Body in Birds. E. LAWRIE.—Examining the blood of birds, in the laboratory of the Hyderabad Medical School, Lawrie found the proteosoma in a very large proportion of sparrows, pigeons and crows, in 100 per cent. of the latter, and his conclusions are in opposition to those of Ross and other authorities, in that he believes that they are not of parasitic origin but simply a product of the blood. His conclusions are stated in the folloing: "1. The sow-called 'halteridium' is the halter-shaped, and the so-called 'proteosoma' is the spherical-shaped Laveran body in birds. 2. No form of the Laveran body, avian or human, can be isolated or cultivated. All the known facts show that it is not a parasite, and as it fulfills none of Koch's canons, it can not be a pathogenic organism. 3. Neither the plasmodium nor the proteosoma possesses the function of the reproduction. 4. Our experiments show that in birds the Laveran body, proteosoma, is a product of the blood, developed in the red blood-cell, and not producing any deterioration in the health of the bird. It can not be reproduced by inoculation from bird to bird, and is not infective and does not multiply in the blood. 5. Seeing that the Laveran body, the plasmodium or the proteosoma, is not a parasite, and that it can not be reproduced by experimental inoculation, it is unlikely that it can be reproduced by a mosquito bite. There is no ground for supposing that the passage of the proteosoma through the mosquito, granting this to be possible, could render it infective. If it could, the cause of malaria would be the mosquito and not the "parasite": that is, of course, absurd. 6. The mosquito theory of Ross, on malaria, is based on a series of assumptions and not on facts. One of these is the assumption which was originally put forward by McCallum of Baltimore, and adopted by Manson and Ross, without examination, viz.: that the flagellum is the male and the hyaline cell the female element of generation in the Laveran body in birds. Now the plasmodists say that the rosette is a sporulating body, and that the formation and liberation of spores by the rosette is the method by which the reproduction of the Laveran body is affected. Our discovery of the rosette in crow's blood proves that McCallum's assumption at all events is false, since it is evident that even if the proteosoma were a parasite, it could not be reproduced in two entirely different ways. On the other hand, the rosette is proved not to be a sporulating body in the bird's blood by the fact that its spores are considerably larger than the speck in the red cell, which is the form in which the proteosoma first appears in the blood. Another of the unwarrantable assumptions of Manson and Ross is that it is possible to infect birds with proteosoma by mosquito bites. To have made his position tenable, Ross ought first to have shown that the birds he believed he had infected with proteosoma by mosquito bites would not have got them if they had not been bitten by mosquitoes. Our experiments have clearly shown that you can never be certain that birds of the class in which proteosoma are found—such as sparrows, crows and pigeons—will not develop them spontaneously, and the manifest ignorance of Ross, on this fact, entirely vitiates his inoculation experiments, as well as the conclusions he has drawn from them."

Bulletin de l'Academie de Medicine (Paris), November 15.

Prophylaxis of Syphilis by Treatment. FOURNIER.—The sterilization of syphilitic subjects by prompt and adequate treatment, so as to deprive them of danger for others, is not accomplished by our present method of treatment. Syphilis can not be treated to a complete cure in our hospitals, and the dispensaries are "free" only in name as the consultants are compelled to lose the wages of half a working-day in order to attend them, while the humiliation of confessing a venereal disease in public, the haste, the lack of time for obtaining accurate data and impressing prophylactic measures, render their benefits illusory. The conditions deter many from taking advantage of them, and few return for adequate treatment, but it is of the utmost importance for the general welfare that syphilities should be instructed in the multiple and various dangers to which their condition exposes others as well as themselves, and this is impossible in a thronged consultation room. Fournier, therefore, makes an eloquent appeal for the establishment of six to eight special polyclinics for syphilities scattered throughout the city, connected with the hospitals or not, and open at 8 a.m. on Sundays and holidays, and on other days from 7 to 9 in the evening, that is, at hours which would not conflict with bread-winning duties. One day should be set apart for women.

Presse Medicale (Paris), November 22.

Indications for Resection in Non-Fistulous Coxalgia. P. GUIBAL.—This study of 1023 cases of coxalgia treated at Berck during the past seven years urgently impresses the necessity of patience: "tuberculous changes in the hip-joint are never repaired under three or four years, and may even partly survive longer than this." Ménard's practice is absolute immobilization in a good attitude, extension in bed at first and then a plaster cast, kept up for two years at least. Walking should be supervised and the patient put to bed again at the first evidences of pain, limping and rapid fatigue. Watch should be kept for an abscess. It is easy to work the fingers under the cast to palpate the region, in search for an abscess—an opening should be left in the cast for the purpose—and this should be done every month. There is no pain under the plaster; fever is exceptional and the evidence of an abscess is usually a surprise. If it remains deep, with no tendency to open, punctures and injections are usually sufficient treatment, resulting in a cure in over three-fourths of the cases. If it persists over six months, resection may be indicated; urgently if the abscess shows a tendency to reach to the surface. The vicious attitude consecutive to a badly treated coxalgia does not impose resection, but osteotomy, and this only when entirely cured and the head somewhat firmly fastened to the ilium and immobilized. In a few rare cases the head is very movable after recovery. Ménard cures these "floating luxations" with Hoffa's operation for congenital luxation.

Semaine Medicale (Paris), November 22.

Levulosuric Syndrome. P. MARIE.—A couple of years ago Marie described a syndrome: melancholia with ideas of ruin and suicide; obstinate insomnia; permanent impotence; presence in the urine of a substance reacting to Fehling's solution and rotating the plane of polarization to the left; rapid disappearance of all these symptoms on suppression of carbohydrates. Lépine asserts that the disappearance of the syndrome on a diabetic diet is evidence that the two observations on which the syndrome was founded must have been cases of diabetes, and that the levorotatory substance has merely never been sought before in diabetes, but Marie responds, reaffirming the rare special character of the syndrome while awaiting an opportunity for further observations by himself or others.

Berliner Klinische Wochenschrift, November 13.

New Method of Mercurial Treatment. BLASCHKO.—Welander is now using, instead of his pillow-slip (see JOURNAL xxxii, p. 615), a bag filled with "mercuriol," a powder containing 40 per cent. Hg., an amalgam of Hg. with tin and aluminium. He has been following the pillow-slip method for two years, but always disapproved of it as dirty and wasteful of mercury, although appreciating its efficiency. He has now obviated these inconveniences by having a cloth impregnated with mercury, "mercolint," which is made into a little apron to be worn over the chest night and day. The mercolint looks like an ordinary gray cloth. Not a trace of salve or mercury is to be seen. The salve contains 90 per cent. mercury, and each apron thus represents ten to fifty grams of it. In about four weeks the cloth grows white, showing that the mercury has evaporated, and its prompt appearance in the urine, frequent stomatitis and salivation, are evidences that a large amount has been inhaled by the wearer. For the majority of cases, in which less violent measures are required, for slight relapses and intermediate courses ithw Fournier-Neisser treatment, in syphilitic anemia, for pregnant women, for infants and weak persons generally, and as a preventive of exacerbations, Blaschko recommends the wearing of this little apron as a most "effective, convenient, neat, even elegant method of mercurial treatment," while the low price—about thirty-six cents—places it within the reach of every one. The

"mercolint" is only sold on a physician's order. The syphilitic processes rapidly heal, except in the most obstinate cases and those requiring the most energetic treatment. The benefits are much more rapid and pronounced when patients remain in bed.

Centralblatt f. Bakteriologie u. parasitenkunde (Jena), October 14-28.

Endovenous Injections of Anthrax Bacilli in Sheep Thoroughly Immunized Against Anthrax. A. SCLAVO.—By means of repeated endovenous injections of anthrax bacilli, Sclavo succeeded in overcoming the resistance of thoroughly immunized sheep. The conflict with the bacilli was evidently transferred to tissues less able to oppose them than the subcutaneous connective-tissue, although the blood was full of substances which amply protected rabbits against subcutaneous injections of the bacilli. This paradoxic fact was explained by further research which demonstrated that the immunizing effect of the immune serum is not by direct action, but indirect, by its stimulating influence on phagocytic activity.

Extermination of Mosquitoes. CELLI AND CASAGRANDI.—The Italian Societa per gli studi della Malaria has concluded that the thorough extermination of mosquitoes requires a more complete knowledge of their habits of life than we now possess. Tests with hundreds of substances have shown that the larvæ and fully developed mosquito are easily destroyed, but the pupæ are very resistant; and that the most effective of all the substances tested is petroleum with a low specific gravity, which immediately spreads out on the surface of the water and kills the mosquito embryo by depriving it of air, while it has no deleterous effect on fish and vegetation. The writers express surprise that this measure has not been more generally adopted. The oily sheet evaporates so that it is only effective for two days. After this time the spaces here and there completely nullify its usefulness. Next in order of effectiveness is the insect powder made from the unopened buds of the chrysanthemum. It is harmless for animals, and the suggestion is made that the plant, *Chrysanthemum cinerariae folium*, be planted on a large scale in malarial regions. Certain aniline dyes—laryeithin, gallol and malachite green—are also insecticides, and if the air is saturated with turpentin, camphor, garlic, iodoform, menthol, nutmeg or sulphur fumes, the mosquitoes will be destroyed, but any degree less than saturation merely benumbs or drives them away without killing them.

Antisepsis of the Mouth. C. ROESE.—A large number of mouth washes were tested on subjects who during the forty-eight hours of the tests neither ate, drank, hawked, coughed nor talked for any length of time. Each substance was tested at least eight times, some twenty-four. Roese found that tepid physiologic salt solution has considerable bactericidal effect, and recommends it to the sick and poor as an inexpensive and effective antiseptic for rinsing the mouth. Cold substances induce a venous congestion which favors the development of bacteria. He found that the number of bacteria was very much diminished by a meal; the broader the face and consequently the more vigorous the muscles of mastication, the greater the number of bacteria dislodged and carried down into the stomach with the food. Continuous talking also diminished the number of bacteria, and certain articles of food, gooseberries, peaches, cider, have a considerable bactericidal effect. Miller's mouth-wash is the most effective—with the exception of odol—but it must be fresh; otherwise it proves a good culture-medium. Formula: acid. benzoic., 3.0; tint. ratanhæ, 15.0; alcohol, 100.0; and ol. menth. pip, 0.75. One teaspoonful in a wineglass of water for rinsing the mouth. Roese mentions that he cures an inflamed gum by dipping his tooth-brush in 60 per cent. alcohol, and thinks that alcohol will yet assume a more prominent place in antisepsis on account of the great dilatation of the small terminal arteries and capillaries which it induces. (Compare with Buchner, JOURNAL, p. 1096.) The tabulated tests show that odol, in either 5 or 10 per cent. solution, is superior to all other substances which are not directly injurious for either teeth or gums, on account of its strong bactericidal properties, its harmlessness and its pleasant taste. It is a brown oily substance with great surface attraction, and spreads out evenly over the lining of the mouth, where it breaks up into salicylic acid and phenol, the same as salol in the intestines. It is therefore closely allied to salol and yet is physically entirely different.

Centralblatt f. Gynaekologie (Leipsic), November.

Hydrorrhea Uteri Gravidi. W. STOECKEL.—After the third month of an apparently normal pregnancy II-para, a discharge of a clear fluid for several days alternated with hemorrhage until delivery, at the seventh month, of a recently-dead fetus, which had escaped from the ruptured sac into the uterine cavity at an early period and continued its development undisturbed, while the membranes had atrophied and shriveled. The preparation showed a placenta marginata previa, probably the cause of the rupture of the sac and consequent intermittent escape of amniotic fluid. The case is another refutation of Price's assertion that the integrity of the sac is a *conditio sine qua non* for the development of the fetus. He asserts that the peritoneum would digest a fetus unless protected by its sac, but Neugebauer states that he has treated forty cases of extrauterine pregnancy and never lost but one. In many of these the fetus had developed externally to the sac.

Centralblatt f. innere Medicin (Leipsic), November 11.

Exclusive Milk Diet in Diabetes. W. WINTERNITZ.—"The sugar disappears from the urine usually in forty-eight hours after the adoption of a strict milk diet, and many diabetics are thus permanently cured. One patient under observation for five months, abandoned the milk long ago for an ordinary mixed diet, with no return of his glycosuria." The capacity of assimilating carbohydrates from other sources is no criterion for the assimilation of milk sugar on an exclusive milk diet, The milk banishes the sugar from the urine in diabetes in young or very obese persons, and in the glycosuria consecutive to trauma or shock, also in cases in which the sugar still persists after treatment and a course at Carlsbad. In diabetes associated with albuminuria and nephritis, the albumin also diminishes and may disappear completely. Acetone sometimes appears in the urine on the milk diet, or if present, increases, after the sugar has diminished or entirely vanished. This may be due to autophagism, as Schlesinger found that acetone, acetic and oxybutyric acids appear regularly even in normal urine, on a diet without carbohydrates and with very little albumin. In many cases the vanished sugar reappears again as meat is added to the menu, but return to milk alone will completely banish it again. The weight slightly diminishes at first, but then remains stationary or returns to normal. The account of Winternitz's extensive tests and experiences with an exclusive milk diet in diabetes, are to be published in full.

Centralblatt f. d. Krankheiten d. Harn. u. Sexual-organe (Leipsic), Nov. 4.

Implantation of Ureters in Colon. E. HERZEL.—In three personal observations considerable renal polyuria and slight albuminuria still persist—7 months, 2.5 and 5 years. Operation was according to Maydl's method. The albuminuria may be due to a relic of a past pneumonia in one case. There is no pus in the urine to suggest infection of the kidneys. Koranyi attributes the polyuria to either nephritis interstitialis or diffusion of water into the urine through the intestinal wall. He found that if a fluid is introduced into the colon, the freezing point of which is higher—like normal urine—than the freezing point of the blood this fluid will become diluted until the freezing point drops to that of the blood. Herzel warns against undertaking this operation until the particulars of the urine and condition of the kidneys have been accurately ascertained, so as to know what to expect.

Centralblatt f. d. Medicinischen Wissench. (Berlin), October.

Differential Diagnosis of Carcinoma and Sarcoma. A. ADAMKIEWICZ.—"If fresh carcinoma tissue is implanted in the brain of an animal—preferably a rabbit—the animal will die in the course of two or three days, with severe lesions only to be explained by migration of the elements of the implanted carcinoma tissue into the interstices of the brain substance with subsequent production of patches of inflammation and necrosis. Carcinoma tissue also responds with a typical reaction to 'cancroin,' the trimethylvinylammoniumoxydhydrate base of neurin, the specific poison which kills the carcinoma coccidium." Adamkiewicz therefore suggests as an infallible means of differentiating carcinoma to implant a scrap of the suspected tissue in a rabbit's brain. If it is not carcinoma, the tissue will be absorbed and the animal remain in his usual health. This and the absence of the cancroin reaction indicate a non-carcinomatous character for the neoplasm.

Centralblatt f. Prakt. Augenheilkunde (Leipsic), September.

Iritis Glaucomatosa. W. GOLDZIEHER.—Out of a number of cases, Goldzieher selects five, which have been under observation for a number of years, of the affection described in the title. All had recovered from a previous iritis; in all, the transformation of the serous iritis into the glaucomatous form was accompanied by a remarkable fibrinous exudate in the region of the pupil. All were cured without surgical intervention, with the instillation of pilocarpin or eserin, and hot compresses. In the first case the rapid loss of vision seemed to impose an operation and the myotic was only applied as a preliminary, but the rapid improvement rendered it unnecessary. The chamber and pupil region were filled so copiously with the exudate that a suppurative iritis would have been diagnosed by any one unacquainted with the circumstance. The intraocular pressure was intense, not from any hypersecretion, but probably from occlusion of some of the anterior lymph passages, and hence retention and the glaucomatous condition. The eyes returned completely to normal in every respect. One subject has since passed through a recent iritis, but without the peculiar exudate.

Bulletin de l'Academie de Med. de Belgique (Brussels), June 24.

Hemostasis in Atony of the Uterus After Delivery. VAN AUBEL.—In case of failure of all other measures, before resorting to the ablation of the uterus, Van Aubel advocates a median incision, the patient in the Trendelenburg position. The uterus is then lifted out of the abdominal cavity, in exaggerated anteversion, wrapped in cloths dipped in hot physiologic solution, and then compressed *en masse* with an elastic bandage applied as rapidly and evenly as possible, and left while other general measures are applied to induce the organ to contract. This procedure is not serious, and the irritation of the organ inside and out will usually induce a vigorous muscular response. If all fails the organ is ready to be removed as the last resort.

Deutsche Medicinische Wochenschrift (Leipsic), November 23.

Influence of Infectious Diseases on Leucemia. E. KORMOCZI.—A personal observation is compared with those on record, and the coincidence noted that in all, the specific tumors of leucemia diminish in size on the advent of an infectious disease, and that the white corpuscles decrease in number. These changes can be explained by the tissue-destroying action of the bacterial toxins. The decrease in the number of the white corpuscles may be accompanied by a qualitative alteration of the hematologic picture. This qualitative alteration seems to consist in an increase in the cells with polynuclear neutrophilous granulations while the rest of the granulated cells diminish in number. The ungranulated cells—lymphocytes—are not affected. These changes can be explained by the chemotactic action of the bacterial toxins. In some cases the chemotactic action preponderates over the tissue-destroying one, and then the qualitative alterations predominate. It thus can happen that with myelogenic leucemia the ordinary polynuclear cells increase, while the other granulated cells diminish, but as one of these alterations offsets the other, the absolute number of white corpuscles does not vary. With lymphemia, on the other hand, as the number of lymphocytes may not be materially diminished, while the number of polynuclear cells may be increased, the absolute number may not increase. These processes affect the red corpuscles much less, and only in certain severe cases does any important change occur, possibly the result of concomitant hemorrhages and possibly of hematocytolysis.

Importance of After-Treatment of Amputation Stumps. H. H. HIRSCH.—The method which the writer has successfully practiced ensures fine weight-bearing stumps from the first and seems to be a distinct progress in this line. The subject remains in bed with the amputated limb raised, and once or twice a day the end of the stump is massaged for half an hour, at first dry and then with 2 per cent. salicylic acid in olive-oil, the gauze and cotton dressing replaced each time. A wooden box or frame is put in the bed, resting square against the foot of it, and for five to ten minutes every one or two hours the patient makes movements on the box with the stump as if stepping on it with the still raised and wrapped up stump. After each of these periods of exercise, and after the massage, the subject must swing the limb for two to four minutes, slowly and rhythmically flexing and stretching it in turn. Every evening the stump has a warm soda bath. When the stump is sufficiently advanced a small bag of bran is placed on a support and the subject stands on it with the stump, the sound foot on the floor and the stump on the soft bag, supporting himself by the head of the bed, and gradually leaning more and more on the stump until he can stand alone on it. This exercise is repeated for five to fifteen minutes every one or two hours, returning to bed in the intervals. When all these exercises can be easily carried out the artificial limb stump is provided. It differs from others by the fact that it supports the base of the stump alone and not the sides. It consists of three parts: a felt cover for the stump, the wooden leg, two iron strengthening bands reaching up on the felt in front, and plaster bandages to stiffen the soft felt and fasten it to the wood. No crutch nor cane is required. The advantages of this treatment are numerous and obvious. The general health benefits as much as the stump, which in four to eight weeks is ready for general use. The same treatment applies to fractures, amputated arms, etc., with slight modifications.

Gazetta degli Ospedale e. delle Cliniche (Milan), October 1.

Williamson's Reaction in Blood of Diabetics. G. LUCIBELLI.—"This reaction is more delicate, more pronounced, more lasting and earlier in the blood than in the urine of diabetics: it may be evident after the sugar has disappeared from the urine, and is pronounced when floridzin is administered until a transient anuria is produced. Even when urination commences again there is no sugar, as it is completely used up in the organism. This reaction is evident and complete in all forms of glycohemia, however induced." These conclusions are drawn from numerous tests and experiments on animals.

Nitrogenous Metabolism in Relation to Withdrawal of Blood. G. ASCOLI.—Several experiences with patients and experiments on dogs are related which establish that the nitrogenous metabolism is unaffected by venesection—200 to 475 c.c. This confirms Maragliano's assertions in respect to the constant supply of blood *de luxe*, or beyond what is actually required for present needs.

Action of Heterogeneous Protoplasm. CARBONE.—It has been established that the blood of animals inoculated repeatedly with heterogeneous blood or serum, becomes highly toxic for the animals from which the heterogeneous blood was derived. Bordet explains this by showing that the heterogeneous inoculations induce the production of a substance which destroys the red corpuscles *in vitro* and *in vivo*, causing the death of the animal from embolism or thrombosis. He has recently emphasized the surprising analogy between this antihematic and the antimicrobic sera. Carbone now reports experiments with heterogeneous tissue inoculated in the same way. Dogs were thus inoculated with small doses of liver and kidney cells to a total of 60 grams, but no special dissolving action could be discovered in the blood of the animals thus treated for either corpuscles, liver or kidney cells. By etherizing rabbits they were made to support enormous doses of dog serum thus prepared although normal dog serum is slightly toxic for the rabbit, and animals that had received as much as 60 grams of dog serum thus prepared showed no changes in the liver. The inoculations of heterogeneous tissue evidently fail to produce any special antisubstance in the blood, but they increase the phagocytic action immensely, as is evident when the liver cells are introduced into the peritoneum of dogs that had been previously injected in the same way, compared with control animals without this previous treatment. While the liver cells remain almost undisturbed in the latter, in the former they are promptly attacked by the leucocytes and absorbed. Increased phagocytic action and the production of what Carbone calls cellulolytic substances, are therefore the means by which the organism protects itself against invasion by heterogeneous tissue, and the phenomena of defense against micro-organisms only represent a special phase of this general law. The rapid distribution of inoculated blood throughout the organism leads to the formation of the antisubstance at a distance and everywhere, while the effect of the more solid tissue is restricted to its vicinity which is also observed with pathogenic bacteria. Those which do not contain a substance capable of passing readily into solution—the anthrax bacillus, for example—do

not occasion the production of any soluble antisubstance in the serum.

Transient or Continuous Albuminuria with Lymphatic-Scrofulous Disposition. G. GRAZIANI.—"Slight continuous albuminuria in these conditions is not only a sign of latent tuberculosis, but on account of the weakness of the kidneys, the slight lesion which maintains the albuminuria is liable to become aggravated without any actual tuberculous lesion of the organ."

Societies.

COMING MEETINGS.

Western Surgical and Gynecological Association, Des Moines, Iowa, December 27-28.

Southern Surgical and Gynecological Association.

Twelfth Annual Meeting, New Orleans, La., Dec. 5, 6 and 7, 1899.

FIRST DAY—MORNING SESSION.

The Association met at the St. Charles Hotel, and was called to order by the President, Dr. Joseph Taber Johnson, of Washington, D. C.

An address of welcome was delivered by Dr. Henry Dickson Bruns on behalf of the local profession, which was responded to by President Johnson.

DR. ERNEST S. LEWIS, Chairman of the Local Committee of Arrangements, made a brief report as to the work of the Association, entertainments, etc.

MYOMATOUS TUMOR OF EXTERNAL ILIAC VEIN WITH REPORT OF CASE.

DR. A. M. CARTLEDGE, Louisville, Ky., read the first paper. Myomatous tumors arising from the muscular coat of the veins constitute one of the rarest of pathologic curiosities, as a faithful search of the literature by the essayist discovered but two cases reported. A brief report of these was given. His own case occurred in a woman, aged 53 years. Five years ago she suffered from swelling of the lert limb, extending from the foot to the hip; it came on gradually and the limb attained a considerable size; the swelling subsided in eight or ten months. She had pain at this time, in the left iliac region, low down. No enlargement was noticed. Two years ago she noticed a small lump just above Poupart's ligament on the left side, from which she suffered some pain. Within the last year pain has been much greater in the left iliac region, enlargement more distinct and very hard; latterly she has been losing much flesh, has slept poorly on account of pain, and has also suffered from accumulations of gas in the bowels. A diagnosis of carcinoma of the deep inguinal glands above Poupart's ligament was made, probably due to some primary, yet undiscoverable, carcinomatous lesion in the bowels or uterus. Exploration of the iliac tumor was advised for a more positive diagnosis, and removal, if found expedient. This was accepted and the operation performed on March 9, 1899.

Operation consisted of an incision beginning near the external abdominal ring, and running one inch above and parallel with Poupart's ligament, five inches in length. This came in contact with the tumor after opening the fascia of the external oblique muscle. The anterior part of the tumor occupied the inguinal canal; the round ligament was easily identified in front of the tumor, occupying the most fantastic relation to it, wound in and out around several lobules of the tumor; it was separated easily and pushed to the inner side. It was now seen that the tumor was not of glandular origin. By blunt dissection it was gradually freed from its upper and lower and external bed. The outer and deeper attachments were approached with great concern, as they were evidently in the closest relation with the external iliac vessels. Up to this time no vessels of importance had been encountered. It had been expected to run across the deep epigastric, but it nowhere appeared. Gentle and careful blunt dissection carried the pelvic peritoneum upward, no button-holing of the same occurring. After reaching the base and upper and outer part of the growth, the external iliac artery could be plainly felt entering the tumor. Search to the inner and posterior aspect of the artery failed to definitely demonstrate the vein; nothing more than a fibrous thickening could be made out, which was lost in the tumor substance. The point at which the external iliac artery entered the growth was about two inches above its lower termination. The apparent obliteration of the vein and its elimination as a factor in any surgical procedure affecting the circulation of the limb determined the essayist to ligate the artery one-half an inch above where it entered the growth. The fibrous remains representing the vein were similarly treated. The tumor was now separated from above downward, the deepest projection being disembedded from the obturator foramen; it now remained only attached to the vein and artery beneath Poupart's ligament. These were freed from the surrounding structures, by blunt dissection, and were ligated separately and the tumor removed. In cutting the vein below where it entered the growth, it was manifest that its lumen was almost obliterated, barely admitting a good-sized needle. The tumor was removed entire, with not a lobule broken, and passing through it and removed with it was 1¾ inches of the external iliac artery, and the same length of the nearly obliterated vein. The only hemorrhage of any account was from the obturator vein where it passes through the foramen; this was easily secured by ligation. The vessel was much enlarged, as a result of participating in a long-since-established collateral venous circulation. The upper portion of the incision was closed by tier sutures, the lower portion being left open, being occupied by a gauze drain which was placed down to the obturator foramen. The patient is progressing toward recovery.

DR. WILLIAM E. PARKER, New Orleans, referred to the difficulty of diagnosticating tumors below the groin.

URETERECTOMY.

DR. J. WESLEY BOVÉE, Washington, D. C., followed. He said that surgery of the kidney was practically of recent date; and surgery of the ureter was the logical sequence to renal surgery. The paper considered essentially the subject of ureterectomy, an operation less than nine years old, one seldom indicated, but offering brilliant results. Dr. Bovée reported the following case:

MR. J. J. T., 48 years of age, was first seen with Dr. E. Reisinger, of Washington, in August, 1898. Three years previously his left kidney had been removed for a renal abscess, and subsequently another operation had been done by the same surgeon for the remaining pus tracts and severe localized pain. He told the essayist that he had been an invalid constantly since before the first operation, and begged for relief. He had never been without pain and was frequently obliged to resort to morphia. He was much enfeebled, his pulse ranging from 110 to 130, and his temperature from 99 to 101.6. On the left anterior and lateral aspects of the abdomen, slightly below the level of the umbilicus, were two scars of the previous operations. One was so near the median line that he was inclined to think the nephrectomy had been made transperitoneally. A large hernia had occurred at this site. There were three sinus tracts in the left lumbar region, discharging a thin, watery pus. In spite of the general weakness of the patient he decided an exploration to be advisable, and accordingly, on Aug. 17, 1898, after free stimulation, he was anesthetized. With the assistance of Dr. Reisinger a careful exploration was made through an extraperitoneal incision, reaching from just above the level of the upper fistulous opening and in front of the left quadratus lumborum muscle to an inch inside the anterior superior iliac spine. By careful dissection and holding probes in the fistulæ the former location of the kidney was reached. Instead of the kidney a large amount of adipose tissue, containing many pus tracts and calculi and much cicatricial tissue, was found, and a little below it the upper end of the ureter surrounded by calculi and thickened pus. The ureter was about one inch in diameter and filled with cheesy pus and calculi. He resolved to remove the duct, and immediately extended the incision to the inguinal canal, keeping about one inch from Poupart's ligament. With considerable difficulty, but with very slight loss of blood, the ureter, in pieces, was removed to the bladder wall. The distended lumen ended abruptly, about half an inch from the bladder wall, this portion being a solid cord. The wound was closed with through-and-through silkworm gut sutures, a strip of iodoform gauze being passed to the lowest point of the pelvic wound and brought out at the lower end of the external incision, and another strip

in the space formerly occupied by the kidney. The unusual atmospheric high temperature and humidity probably assisted in producing the fatal issue seventeen hours later.

DR. SAMUEL E. MILLIKEN, Dallas, Texas, called attention to a point in technique adopted by Kelly: Instead of making one incision, he leaves a bridge of abdominal wall, making the first incision from the twelfth rib down to the crest of the ilium in front of the lumbar muscles, with a second incision along the inguinal region. This enables the operator to expose the kidney, to make a thorough examination, and also to trace the ureter.

DR. BOVEE, in reply to Dr. Milliken, said there might be the advantage, in two short incisions, of having a less amount of tissue to cut across, as muscles, fascia, etc., over one large one, but he thought there was a drawback in having to dissect through a smaller space to loosen the ureter between the two incisions. Such an operation would require more time, which, in many instances, is a precious element. However, he was not disposed to criticize Dr. Kelly's method, because he had never tried it.

SERIOUS COMPLICATIONS FOLLOWING PASSAGE OF URETHRAL SOUND.

DR. WILLIAM E. PARKER, New Orleans, read a paper with this title. He reported the case of a man with stricture of the urethra, who passed urine with difficulty. The first time a sound was passed, he had a chill, with a temperature of 105. After a week the sound was passed again, with no fever having occurred between the days of passage of the sound. In the meantime he had the man's urine examined, with a report showing the specific gravity to be 1020, .5 per cent. of albumin, no casts, pus, and acid reaction. After the passage of the sound the second time, the man had a urethral chill, suppression of urine, and died with uremic convulsions the following day, that is, the second day after the passage of the sound, although the usual precautions had been taken to prevent urethral chill. The autopsy showed that there was intense congestion of both kidneys, with pus in the pelvis, and in the calices of the left kidney.

DR. WILLIAM P. NICHOLSON, Atlanta, Ga., had seen a number of cases of severe chill following the introduction of sounds where all the necessary precautions had been taken, e. g., six cases of swelled testicle following the introduction of the sound, but had not seen a fatal case. In a book on the "Calamities of Surgery," Sir James Paget mentioned a case where the introduction of the catheter caused suppression of urine and death of the patient. The experience of genito-urinary surgeons would show, no matter how careful they were in sterilizing instruments, etc., in many cases, the apparent nervous connection between the organs would produce a severe chill and, in some cases, suppression of urine.

DR. W. F. PARHAM, New Orleans, believed that post-mortem examinations would show, in cases where death had occurred after the passage of the urethral sound or catheter, some form of nephritic trouble, usually the interstitial. He recalled the case of a man on whom he operated for strangulated hernia, who had given no history of any renal trouble, yet died of interstitial nephritis, as verified by an autopsy.

DR. MANNING SIMONS, Charleston, S. C., had met with a number of cases in which the passage of the sound was followed by trouble. It is his routine practice, when a man presents himself for the first time, in whom he has to pass the sound, to administer 1 gr. of opium, and 10 gr. of quinin immediately after its passage, as a prophylactic measure against urethral chill and fever. He thought the cases should be divided into three classes: 1, those in whom the trouble is reflex from the nervous system; 2, those in whom urethritis is set up by unclean sounds, and, 3, those in whom there is serious disease of the kidney, but not discovered, preceding the use of sounds.

DR. J. D. BLOOM, New Orleans, narrated two fatal cases from the passage of the sound, in New Orleans, and these showed kidney lesions post-mortem.

DR. F. W. MCRAE, Atlanta, Ga., reported a fatal case which occurred in the practice of the elder Westmoreland, while the speaker was a medical student. He had seen complications follow the introduction of the sound. During the last five or six years he had not introduced a sound, except in the direst emergency, without having the patient under observation for several days thereafter. His results had been better since paying particular attention to careful preparation of the patient, instruments, repeated examinations of the urine, etc.

GUNSHOT WOUNDS OF ABDOMEN.

DR. H. H. GRANT, Louisville, Ky., read this paper, which will be published in THE JOURNAL.

DR. HUGH M. TAYLOR, Richmond, Va., said he had operated on three cases of gunshot wounds of the abdomen within the last two or three years. He laid stress on the utter hopelessness of cases until an operation was done. He was aware that arguments had been advanced by good men against surgical interference in many cases. It is not always easy to satisfy the attending physician, in the absence of serious symptoms, that an exploratory incision is imperative. Of the three cases narrated by him, one was saved.

DR. WILLIAM E. PARKER was glad to note that the percentage of recoveries from operative interference in gunshot wounds of the abdomen is improving. Cases occurring in civil life should be operated on as soon as possible. In military life he has taken the stand that with the modern small-caliber bullet, as many cases will get well without operation in the field as with it. He mentioned a case operated on by the late Dr. Miles, in which there were fourteen intestinal perforations, which were closed, and the patient recovered.

DR. MANNING SIMONS had operated on twenty cases of gunshot wounds of the abdomen by laparotomy, and of this number he saved three. One was of the stomach, the operation having been done within a few hours after the occurrence. There were two perforations, one of the entrance, and one of the exit, the bullet having lodged in the muscles of the back. This patient, a boy, recovered and is well to-day. In one of the cases there were fifteen perforations of the bowel. In some he had resected as much as two feet of the small intestine.

DR. SAMUEL E. MILLIKEN had met with one case of gunshot wound of the abdomen in a child, 7 years of age, who had received the contents of a shotgun. He did a laparotomy, and the child recovered.

DR. J. D. BLOOM said the diagnosis of penetrating wounds of the abdominal viscera was very essential in deciding on an operation. He mentioned the case of a man who was brought into the Charity Hospital, where it was thought the peritoneal cavity had been penetrated, but laparotomy disclosed that it had not. He recalled a number of patients who got well where the operation was done within twenty-four to thirty-six hours after being shot.

DR. W. F. PARHAM said it was difficult in many instances to determine the exact location of the wound in the abdomen; therefore, the surgeon should study the character of the wound itself, its direction, the circumstances connected with the shooting, distance of the combatants, etc.

DR. W. E. B. DAVIS, Birmingham, Ala., said the question to be settled was whether every case of penetrating wound of the abdomen should be operated on. He believes every such case should be so treated. The surgeon should carefully examine the wound of entrance so as to determine, if possible, whether penetration has taken place. He condemned the Senn gas test, and said that the teachings of this eminent surgeon in regard to gunshot wounds of the abdomen were harmful, in that they had created a sentiment which made it exceedingly difficult in certain communities to operate on cases of penetrating wounds of the abdomen, because if the patient should die, the surgeon would be censured, and discredit cast on surgery. He and his brother (Dr. John D. S.), had operated on a number of cases of penetrating wounds of the abdomen from time to time.

DR. F. W. MCRAE had seen and operated on five cases of gunshot wounds of the abdomen, at the Grady Hospital. The point of entrance of the bullet was above the umbilicus, the injury having been received when the patient was standing, and in every one of them there were numerous perforations of the hollow viscera. In military practice, he said, wounds were received by soldiers who had been fasting for a number of hours, and the intestines were empty; extravasation was not so likely to occur. On the other hand, in civil practice wounds were almost always received under conditions of more or less de-

bauchery, when the stomach was loaded with whisky, beer, food, etc., consequently extravasation of the contents took place rapidly, and death was much more apt to occur. He considered the Senn gas test worse than useless, it being merely corroborative, not conclusive as to penetration of the viscera.

DR. GRANT, in closing, said he had enunciated a few surgical principles, and he hoped the Fellows would conclude that it was the duty of the surgeon to operate as much in a penetrating wound of the abdomen as it was in cases of strangulated hernia.

FIRST DAY—AFTERNOON SESSION.

INTURATION APPARATUS.

DR. RUDOLPH MATAS, New Orleans, presented a paper in which he gave the history of pulmonary insufflation and artificial respiration in intrathoracic surgery by intubation of the larynx, exhibited an apparatus, and demonstrated its application. In summing up the peculiarities of the apparatus he had shown he called attention to the following points: The original O'Dwyer canula, while retaining its intralaryngeal portion unchanged, is modified so that it may be utilized as a respirator, as a tampon canula, as an anesthetizer, as a tractor and tongue, as an insufflator, and as an aspirator.

RECTO-VAGINAL FISTULA.

DR. LEWIS S. MCMURTRY, Louisville, Ky., read a paper on this subject. He said that, excluding cancer extending from the cervix uteri, rectovaginal fistula is due to traumatism, not to the compression of the tissue, as in vesico-vaginal septum, cicatrizing inferiorly, but leaving a perforation above where the septum is thin and permits contact of vaginal and rectal mucous membranes, thus uniting these membranes and making a permanent opening. Wounds made in instrumentation through the vagina, and the pressure of foreign bodies retained in the vagina sufficiently long to produce ulceration and necrosis, are among the rare causes of this lesion.

The most common site is in the lower portion of the vagina, just above the sphincter muscles, and at the point already indicated where the septum is thin and the mucous surfaces are in close proximity one to the other. The opening is usually very small, and the mucous membrane is reflected around like a fringe, making its detection more amenable to touch than to sight.

The method usually applied to the repair of vesico-vaginal fistula, whereby the edges are freshened in a funnel-shaped denudation, will rarely succeed in repairing a rectovaginal fistula. The action of the anal sphincter, the penetration of fecal matter, and the sparse layer of tissue prevent repair by this method. The divulsion of the sphincter muscle will not suffice to overcome this obstacle to success in the large proportion of cases. Extensive cicatricial deposit is another obstacle to repair by this simple procedure. The operation in consequence is resolved into a modified perineorraphy, by which the fistula is transformed into a complete tear of the perineum. The method of flap-splitting popularized by the late Lawson Tait is pre-eminently applicable to this procedure. By this method broad surfaces are supplied without loss of tissue, and permit gliding of the vaginal and rectal orifices of the fistula so as to interpose firm and healthy tissues. In exceptional cases, where the fistula is so low down as to be within the grasp of the sphincter, it will be best to divide the septum vertically, liberally freshening the margins of the fistula, and suture the surfaces as in complete laceration of the perineum.

In a very limited class of cases, wherein the fistula is small and cicatricial deposit is not extensive, a simple denudation and suturing after divulsion of the sphincter ani muscle may succeed. The flap-splitting method already mentioned will be found most applicable and should be preferred for general application. Vertical division of the septum should be the first step of the operation in low fistulæ with extensive cicatricial deposit, and the operation is then resolved, after paring the edges of the fistula, into the operation for complete tear of the perineum. It will rarely be necessary to use buried sutures: when used these should be of catgut and should be introduced after the Lembert plan. As already stated, the flap-splitting operation of Tait has the greatest field of usefulness in this procedure.

The following case is of special interest, both on account of the unique cause of the fistula, and the consequent deduction that a very simple and common gynecological appliance is not without danger under certain circumstances.

Miss C. W., aged 31, never married, teacher, was the subject of a backward displacement of the uterus. In August, 1899, she applied to a physician for treatment, and a metallic pessary of the Hodge pattern was inserted. The pessary was placed on a Thursday by the physician who had referred the case to Dr. McMurtry, and the patient returned to her home, some thirty miles distant from the physician. On the second day the patient began to suffer pain, which increased day by day, and when examined by the physician on the Monday following the pessary was found protruding into the rectum and was removed per anum. When the patient was referred to him, on October 6, there was an opening in the rectovaginal septum just above the anal sphincter, of oval form, that would readily admit the end of the little finger. The operation consisted of divulsion of sphincter, separation of the vaginal mucous membrane, freshening the edges of the fistula and suturing with Lembert sutures of catgut the rectal portion of the fistula, gliding and suturing the vaginal mucous membrane. Union was prompt and perfect, and the patient is now quite well.

In the discussion, cases of rectovaginal fistula were reported by Drs. T. J. Crofford of Memphis, Tenn.; George Ben Johnston of Richmond, Va.; Geo. H. Noble of Atlanta, Ga.; W. D. Haggard, Jr., of Nashville, Tenn., and J. Wesley Bovée of Washington, D. C.

OSSIFIED UTERUS.

DR. C. JEFF MILLER of New Orleans, read the report of an interesting case of what he and others considered an ossified uterus. He presented the specimen.

(To be Continued.)

College of Physicians of Philadelphia.

Section on Otology and Laryngology, Nov. 15, 1899.

DEFECTIVE SPEECH IN CHILDREN WITH HYPERTROPHIED PHARYNGEAL TONSIL.

DR. G. HUDSON MAKUEN presented three children from 7 to 12 years of age, with defective speech of the form known as "decapitation," in which initial consonants, especially *s*, *c*, *k* and *t*, are omitted, making speech almost unintelligible. In each case there was enlarged pharyngeal tonsil; in one there was a bifid uvula. The latter peculiarity exists in about 15 per cent. of children with defective speech, a much larger proportion than is found generally. The former condition of hypertrophy of the glands in the vault of the pharynx in early childhood, when the patient is learning to talk, interferes with proper articulation and favors the formation of bad habits of speech. He recommended that in all cases where skilful training does not cause marked improvement in the faulty enunciation the nasopharynx should be examined for adenoids, and when found they should be removed preparatory to voice training.

A CASE OF SUSPECTED TYPHOID FEVER SHOWN TO BE ACUTE CATARRHAL OTITIS MEDIA WITHOUT PAIN.

DR. CHARLES H. BURNETT read a communication with this title. The patient, a boy 9 years of age, was brought to the Presbyterian Hospital as a case of typhoid fever, with a temperature of 104.4, which was temporarily reduced by the bath treatment and cold sponging, but was still 103.4 when Dr. Burnett was called in consultation two days later. The point of chief interest was the absence of pain in a case of middle ear inflammation, though attended by fever and delirium. The middle ear is often infected in cases of typhoid fever, the inflammation usually setting in in the third week. It is probably due to infection from the nasopharynx, owing to introduction of decomposing food or secretions from the posterior nares in the recumbent patient, and is due to specific typhoid infection. This complication of typhoid can be avoided by the use of antiseptic sprays and having the patient's head elevated when feeding him. The otitis may be overlooked in fatal brain lesion occurring after typhoid fever and death attributed to other causes.

DR. B. A. RANDALL insisted on the importance of examination of the ears in cases of infectious disease. He thought that by the judicious use of the Politzer bag the same result might be gained as by incision in acute cases, as similar immediate relief is experienced by the patient by gentle inflation.

DR. E. B. GLEASON commented on the absence of pain in paracentesis of the ear-drum. When the drum remains nearly normal in appearance paracentesis is generally painless, but if the drumhead is greatly inflamed, red and swollen, this is not usually the case, and the patient may faint away with the pain, as occurred in a case of his recently, in spite of the preliminary use of cocain ointment—10 per cent., with lanolin. As regards treatment, incision is sufficient in cases when the disease is limited to the atrium, but when the attic is invaded neither incision of the membrane nor simple inflation will be sufficient, but an incision through Shrapnell's membrane into the attic will be required. In the case cited, which was probably due to simple catarrhal inflammation of the attic, the pain continued for several days after the incision, which was followed by a scanty discharge of bloody serum.

DR. J. S. GIBB said that the case recalled one which he had seen some years ago; of a man who was brought to the Episcopal Hospital with many of the symptoms of typhoid; he had epistaxis and continued fever, so that there was great difficulty in diagnosis. It was found that he had deafness and pain in one ear, and, in a few days, there was a discharge of pus from one ear, followed by symptoms of mastoid irritation. At this time, Dr. Gibb was called to see the patient and found the mastoid cells involved in the inflammation. The operation of opening the mastoid and removing the purulent contents from the cells was followed by immediate relief and speedy recovery. It had been originally a case of middle-ear disease, but it was not until the mastoid cells were invaded, that the condition was noticed.

DR. F. WOODBURY, in illustration of the speaker's recommendation to clean the nasopharynx in cases of infectious disease, reported two cases of children suffering with la grippe, where, on examining the throat, the pharynx was seen to be filled with mucus. The temperature fell from 104 to 101 F. after syringing the nasopharynx with an alkaline solution and the children rapidly recovered.

DR. C. H. BURNETT said that he had never succeeded in relieving pain in these cases of middle ear inflammation by the use of the Politzer bag, but in several cases he had increased the pain and had therefore desisted from its use. In the case of the boy, who was delirious, it would not have been possible to use it. There would also be a risk of forcing infectious matters from the pharynx into the middle ear. He had never observed fainting after paracentesis of the ear drum, possibly because he does not operate with the patient sitting in an upright position. The children referred to, with the jelly-like mass of mucus in the pharynx, afforded a good illustration of the possible danger of infection of the ears, had inflation been attempted. He felt convinced that many cases of middle ear disease are due to the forcing of secretions from the pharynx into the Eustachian tube, chiefly by the habit of feeding patients while lying on their backs. We are conscious of the fact, when we have sore throat, that one of the first symptoms is the closing of the Eustachian tube, so that in swallowing we do not hear the ordinary clicking sound caused by exhausting the air in the middle ear. This is because Nature shuts off the ear from the inflamed part, and thus protects it. Cases have come to him like the following: a man, on getting up in the morning, having a cold in his head, blows his nose violently and is taken with a pain in the ear, due to forcing open the Eustachian tube, and driving some infectious matter into the middle ear. It takes a very little time for infection to cause inflammation.

DR. E. B. GLEASON stated that with regard to the use of the Politzer bag in their cases, it was entirely a matter of dosage. He has found that air, or chloroform vapor, blown into the middle ear with great gentleness almost always gives immediate relief from pain. If the Politzer bag is used forcibly it invariably increases the pain. It should be preceded by cleansing the pharynx and applying a little cocain solution to the Eustachian orifice. In purulent middle ear disease, when the pus has burrowed partly through the drumhead the incision is painless.

TREATMENT OF DEFLECTION OF NASAL SEPTUM, COMPLICATED BY TRAUMATIC DEFORMITY OF EXTERNAL BONY AND CARTILAGINOUS FRAMEWORK OF THE NOSE.

DR. E. B. GLEASON read a paper on this subject. He divided deformities of this character into: 1, lateral deflection, and 2, flattening, or "saddle-back nose." To relieve the accompanying stenosis in cases of deflection, it is not necessary to straighten the septum, but to make it parallel with, and equally distant from, each lateral wall. It is generally the ear on the side of the wide nostril that becomes affected, by extension of the atrophic rhinitis to the nasopharynx. Two cases were exhibited, operated on under cocain anesthesia, by the "V-shaped" incision through the septum with forcible flexion of the septal flap. Traumatic flattening of the bridge of the nose is generally due to fracture of the base of the nasal bones with dislocations from the nasal processes and depression of the nasal bones with rotation outward of their long axes. The most common lesion of the septum is a dislocation of the triangular cartilage from its bony attachment below. One case of this kind was shown with complete occlusion by a deviation of the septum involving only its anterior one-half inch. The stenosis was easily remedied by the "V-shaped" incision, but the external deformity required a more extensive operation under full anesthesia. Dr. Gleason's method of cocainization is to insert tampons of cotton wet with 4 per cent. cocain hydrochlorate solution for half an hour previous to operating, and, just before making the incision he goes over the outline of the cut with a piece of moist cotton on a probe, which he has dipped in a bottle of powdered cocain, thus obtaining absolute local anesthesia. The patients shown stated that the operation was painless and that they had attended to their usual avocations the day following.

DR. B. A. RANDALL said that his observation agreed with the speaker, that the ear first affected generally corresponds with the side of nose admitting the larger quantity of air.

DR. J. S. GIBB said that his observation also, as regards the side and ear affected, agreed with that of the speaker that the affected ear is on the side opposite the stenosis, the explanation being that the whole work of the nasal function is restricted to one side, the larger, and consequently the atrophic condition is greater on that side of the pharynx. He stated that straightening the septum very rarely had anything to do with correction of the external deviation, although great benefit may be derived from it, by giving proper breathing space in both chambers. One point is the cocainization of nasal chambers. He prefers a 10 per cent. solution of cocain applied from ten to to twelve minutes before operating.

DR. F. WOODBURY inquired whether the lecturer had observed any ill-effects from application of strong cocain solution to the middle turbinals. In one case he had observed great prostration with pallor and weak pulse, following a very brief application of a 4 per cent. solution. He thought that the contraction of blood-vessels observed in the upper chambers of the nose might be accompanied by a similar contraction in the blood-vessels of the anterior portion of the brain. He also asked whether Dr. Gleason uses the adrenal extract in connection with cocain, in order to prevent hemorrhage.

DR. J. S. GIBB said that he had seen two cases of cocain poisoning at the Polyclinic, not syncope, but cocain intoxication. They were so alarming as to make him timorous as to the use of that drug in certain individuals. Just at that time eucain was introduced, and he used it, and could see no difference between its effects and cocain in the nasal chambers, except that eucain is not followed by the danger of cocain intoxication. He has not abandoned cocain, but he uses it more for the larynx than the nose, because it is less dangerous in there than in the nasal chambers, and less irritating than eucain.

DR. E. B. GLEASON said that in ten years' experience he had only seen one patient with poisonous effects from cocain, and that one had taken two headache powders, containing phenacetin, before coming to his office. He applied cocoain to the turbinals and the woman became unconscious, and required warm applications, injections of strychnin, and stimulants to bring her around. This was a case of rhinitis and not one of operation. He applies the cocain on a pledget of cotton, with the excess of solution wiped off; in this way none drops into the pharynx, to be swallowed. In using a spray a considerable quantity is swallowed. The field of operation is packed with cotton saturated with 4 per cent. cocain. He has never seen any one become unconscious, or faint, as the result of

cocain *before* the operation. Some of the cases of "cocain poisoning" are simply cases of syncope following the operation.

DR. B. A. RANDALL reported a case in which the opposite effects from those described were obtained from cocain. In a child, with swollen turbinals, there was as much excitement as from any of the mydriatics. A very small quantity only was applied, and the child became perfectly wild with delirium, until after midnight. Many of the so-called poisoning cases from cocain are not really toxic results, but are merely due to collapse from mental excitement.

Cleveland Medical Society.

Nov. 24, 1899.

EOSINOPHILE CELLS.

DR. W. T. HOWARD read a paper entitled "Observations on the Origin and Distribution of Coarsely Granular Eosinophile Cells in the Human Body." He made a preliminary report of researches made by himself in association with Dr. R. G. Perkins. Their work was based on the study of sections from 850 specimens derived from operation and on the organ from 115 necropsies. In the operative material these cells were found in larger or smaller numbers in the tissues, or in both the tissues and blood-vessels, in 85 cases—10 per cent. Most of these were inflammatory cases—salpingitis, ovarian abscess, appendicitis, osteomyelitis, etc.—while some were tumors—carcinoma, sarcoma and nasal polyps. In the necropsy material these cells occurred in apparently normal organs in 6 cases, and in organs showing various pathologic changes in 21. They were present in the spleen in chronic interstitial splenitis, in the kidney in acute and chronic interstitial nephritis—5 cases—in the lung in 1 case of pneumonia, in the gastro-intestinal tract, in 4 cases, including acute and chronic gastritis and dysentery, and in the muscle lesions of 1 of fatal trichinosis. In a number they could trace the origin of eosinophiles from plasma-cells, and they regard the plasma-cell as the chief source of origin of these cells. They think that the coarsely granular eosinophiles play a more important part in inflammatory and other lesions than is commonly believed.

DR. O. B. CAMPBELL asked whether the eosinophile cells are friendly to the organism, or are pathologic.

DR. C. F. HOOVER said that, on examining a number of cases, he had been struck by the fact that the eosinophile cells in the circulation vary in number within wide limits. In his case of trichinosis, reported by Dr. Howard, although the myositis involved all of the skeletal muscles, and although the muscular tissue must have been loaded with eosinophile cells, yet those in the circulation were not increased in number. He asked what were the conditions that would retain those cells in the muscles.

DR. W. T. HOWARD said that the eosinophile cells are always present in the body. It is only lately that these cells have been much studied and, while at first they were thought to be diagnostic of leukemia, later study indicates that there is no special relation between the diseased organs and the cells. They are formed in a number of organs, especially in the bone-marrow and in the alimentary tract. While the general belief is that they are formed from the ordinary neutrophile cells, his own studies have shown that the chief cell from which the eosinophile cell is derived is the plasma-cell, which in turn has its origin from the lymphocyte and from the hyaline leucocyte. These cells play a much more important part in inflammation than is generally supposed. In Dr. Hoover's case of trichinosis, the eosinophile cells were undoubtedly formed in the muscle lesion because they were found in that location, but not in the blood-vessels. In the five cases of trichinosis that recovered, and in which the eosinophile cells were found in the blood-vessels, it is probable that the cells were formed in the muscles, and after the process was cured, the cells being no longer of any use at the seat of disease, passed into the blood. The transition from plasma-cells to eosinophile cells occurs by the following stages: 1, the hyaline, non-granular plasma-cell; 2, protoplasm, which normally should not stain with eosin, stains quite deeply; 3, in other cells we find very fine granulations that will stain with eosin; 4, cells with large granules; 5, cells with the nuclei of typical plasma-cells surrounded by coarse granules. With the development of the granules the cell enlarges and the nucleus changes until it resembles the ordinary polymorphous nucleus.

TONSIL ENUCLEATION.

DR. R. D. FRY read a paper entitled "Bloodless Enucleation of the Tonsils Under Local Anesthesia." He first reported some research work done for him by Dr. B. G. Hannum, that showed the tonsils in animals to possess only mucus-secreting function, and no especial function in man. The relative weight of tonsils to body weight is eight times greater in animals than in man, and in animals there are more abundant mucous glands. He advised total enucleation of diseased tonsils. The tonsil is not cut, but shelled out with a blunt hook, and the vessels are severed with a snare. Enucleation is done under cocain anesthesia and the hemostatic effect of desiccated suprarenal. It is the only thorough, safe, painless, bloodless, esthetic operation, resulting in a normal throat with restored function. He has performed forty operations with eminently satisfactory results.

DR. HUNTER ROBB asked if the essayist had noted symptoms of cocain poisoning in any of the cases on which he had operated in this manner.

DR. J. M. INGERSOLL thought that in comparatively few cases was it necessary to entirely enucleate the tonsils. Usually he partially dissects out the tonsil, and then surrounds it with a galvanocautery snare, which leaves a small stump. He is surprised that general surgeons do not make more use of the extract of suprarenal capsule. In operations on the tonsils and nose, the application of this preparation almost entirely prevents hemorrhage.

DR. C. J. ALDRICH spoke of the tonsils as a source of tubercular infection, and said that when there are enlarged glands in the cervical region, it is safe to conclude that there is tubercular infection, and the tonsils should be removed at once. During the past few years he has observed a number of cases of chorea associated with enlarged cervical glands, and he reported a case that had suffered nine years from chorea, in which enucleation of the tonsils followed by less than four months' treatment with the same remedies that had previously been used brought about a complete recovery. He thought this observation gives strength to the theory that chorea is an infectious disease.

DR. W. T. HOWARD said that the fact that the tonsil does not contain digestive ferments does not prove that it is useless to the body, especially as it is well known that this organ plays a part in the formation of leucocytes. Students of immunity believe that the tonsils, along with the other collections of lymphoid tissue along the gastro-intestinal tract, not only defend the body against invading bacteria but also aid in the production of immunity. It is quite remarkable to think that simple hypertrophy of the tonsils is simply a reaction against irritants in the form of bacteria.

DR. R. J. WENNER, noting a recently reported case of death from hemorrhage following complete enucleation of the tonsils, said that it was a mistake to conclude that the operation is entirely free from danger. He also said that it was a wise precaution to palpate the tonsil previous to any operation on it, with the view of determining the possible existence of an anomalous course of the carotid artery, such as has sometimes been found. He considers it rarely necessary to remove all of the tonsillar tissue.

DR. A. J. OCHSNER, Chicago, expressed the belief that the enlarged tonsil is one of the most mischievous structures to be found in the body, as it is practically certain, when diseased, to become filled with tubercle bacilli and give rise to secondary infection of the lymph-glands and finally the lungs. Whenever there is infection of the cervical glands a recurrence after the removal of the diseased ones will depend to fully as great an extent on the removal of the tonsil and adenoids, as the removal of the infected glands themselves. His results with the different methods of removing the tonsils have been exactly the same, and he thought that any way to which the operator became most accustomed was the best for him. He prefers the Gunn tonsillotome.

DR. R. D. FRY, in closing, said that he had been very careful in the use of cocain, and that while most of his cases showed some increase in pulse and some other effects from the drug, there had never been any untoward results. He does not use

the galvanocautery to remove the tonsils, for fear of a slough, which is said to form after that procedure. The cold-wire snare is better. Enucleation has the advantage that hemorrhage is largely prevented by the opportunity afforded to apply torsion to each of the bleeding vessels. He has seen cases in which chorea was associated with enlarged tonsils and lymph-glands, and thinks the small size of the tonsil precludes it being very active in the manufacture of leucocytes. The increase in nutrition of patients whose diseased tonsils have been removed is a very strong argument in favor of operation. The further fact that the diseased tonsil may be the source of infection proves that great benefit may be derived from its removal.

REMOVAL OF HAIRY NEVUS.

DR. F. E. BUNTS reported a case, the patient having a large hairy mole covering almost the entire side of the face and causing great disfigurement. The operation for its removal was done in three stages, removing about one-third of the growth at each sitting, the operation extending over a period of about three years. The denudation was carried down to the subcutaneous tissue, in order to avoid new growth of hair, and skin-grafts were taken from her thigh to cover the denuded area. No contractures took place and the appearance of the face, as shown by a photograph, shows entire absence of the growth with an almost smooth surface replacing it. The object of the separation of the operations by such long intervals was to prevent cicatricial contraction about the eye and mouth.

DR. C. A. HAMANN noted in the photograph that the area of distribution of the nevus corresponded very closely to the distribution of the second division of the fifth nerve. This observation has been made in other cases and is very interesting.

FOREIGN BODY IN SKULL.

DR. GEORGE W. CRILE reported a case he had operated on, Dec. 28, 1896, for the removal of a brass belt-lacer that had penetrated the skull just above the right ear. Following its removal there was marked infection of the brain, with septic meningitis and great protrusion of brain substance through the opening in the skull. On the theory that the pressure was the most serious symptom, he kept cutting away the edges of the trephined wound until the opening in the skull was over two inches long. This allowed the brain to bulge freely, and it was covered with bichlorid dressing of the strength of 1 to 10000. A considerable amount of brain tissue was lost. The patient had a chill and fever and the pulse was at first slow, afterward very rapid. After the wound had finally healed, the brain returning within the cranial cavity, the patient had epileptic fits of the Jacksonian type, along with complete hemiplegia of the left side. By means of massage and electricity the patient had recovered the use of the leg and side of the face, but not of the arm.

DR. C. J. ALDRICH, noting the Jacksonian type of epilepsy, suggested that a second operation is warranted. The protrusion of the brain in this case was not a hernia cerebri, as it took place too quickly and was the result only of intense congestion and infection, and was not a fungating granulation.

NEEDLE NEAR POUPART'S LIGAMENT.

DR. C. L. WEBSTER reported a case from which he had removed a small needle from just below Poupart's ligament, the interesting fact in the history of the case being that there had been several attacks of inflammation of the bowels for ten or twelve years previously. He had seen one other case of supposed appendicitis which had been occurring when a needle came through the abdominal wall.

Wayne County Medical Society.

Detroit, Mich., Nov. 23, 1899.

RIGIDITY OF MATERNAL SOFT PARTS DURING LABOR.

DR. J. J. MULHERON read a paper on the above subject. As to the rigidity of the os uteri he said, three varieties are recognized, the anatomic, the pathologic and the spasmodic. The first is most frequently met with in aged primiparæ, though it may complicate the labor of very young women, and seems to be due to a hypertrophy of the transverse fibers of the cervix, thus causing them to offer undue resistance to the action of the longitudinal fibers of the body of the uterus. Digital touch conveys an impression of inelasticity of the os uteri, which persists in spite of powerful uterine contractions. The pathologic variety is produced by cicatrices, growths and malignant deposits. Multiparæ who have suffered lacerations of the cervix are most frequently the victims of such a complication in labor. Possibly, also, we have in sexual abuse a not uncommon cause of pathologic rigidity of the cervix. Spasmodic rigidity is to be regarded as a functional disorder—a form of perverted uterine action. Its onset is usually sudden and may occur at any time during labor. Suddenly, while the woman is apparently doing well, she begins to show signs of uneasiness and irritability, and for the first time cries: "Oh, Doctor, I can never stand this!" The examining finger now causes pain and its tip detects a change in the parturient canal. The vagina is perhaps drier and the mucous membrane feels hot. The circumference of the os uteri feels thin, tense and unyielding. The object of treatment is to promote relaxation and prevent rupture. In the case of anatomic rigidity a masterly inactivity on the part of the accoucher is all that is required. A hypodermic of morphin, occasionally administered, will make the woman's sufferings tolerable. In the treatment of the pathologic rigidity of the os, when interference becomes necessary, the only remedy is the knife. When a case of spasmodic rigidity is met with the first thing to be done is to restore the uterus to its proper axis. If this fails to relieve the spasm, a hypodermatic injection of morphin and atropin serves the double service of relieving the spasm and quieting the general nervous irritability. In obstinate cases an enema of a pint of warm water holding in solution 20 gr. of chloral hydrate should be used. Chloroform anesthesia has been used in lieu of this, but is not so effective. Regarding the rigidity of the perineum, the Doctor does not believe any rule for the prevention of the laceration of this structure is of any value, and some are positively harmful. When the rigidity is such that the attending physician sees that the perineum can not be saved, the only correct treatment is by episiotomy. The point selected should be the middle of the lower quadrant of the circular outlet produced by the advancing head. The incision should be made with a blunt-pointed bistoury introduced on the flat with the index finger as a guide. The incision, in the selected location, differs from the spontaneous tear, not only in the particular that it is regular and clean-cut, but also that its edges naturally approximate each other instead of gaping apart. Episiotomy is unquestionably one of the most important of obstetric procedures, and its technic should be mastered by every one who assumes to deliver women.

Maryland Public Health Association.

INFECTION FROM AIR-PASSAGES.

DR. WIRT A. DUVALL, Baltimore, at the late meeting of this Association held in that city, exhibited an apparatus for the prevention of infection by the air-passages. It is designed to protect physicians in examinations of patients affected with infectious diseases, and consists of a thin plate of glass which is held in front of the face by an appropriate framework strapped about the head, such as holds the head mirror in ophthalmoscopy. Through the glass the throat of the patient is readily inspected without risk of poisonous germs being breathed or coughed into the face and mouth. The apparatus may be sterilized after use. A committee was appointed to go before the next legislature to press the subject of a burial permit law and other reforms in sanitation, urged by the Association.

MEMORIAL TO DR. ROHE.

The question of a suitable memorial to the late Dr. George H. Rohé who, at the time of his death, was president of the Association, was discussed. It is probable that the memorial will take the form of a tablet and a collection of books on hygiene, which will most likely, as does the Frick collection, form a branch of the library of the Medical and Chirurgical Faculty. An effort to raise $500 here is being made in Baltimore, and it is hoped this amount will be increased to the desired proportions by contributions of Dr. Rohé's friends outside of the state.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance $5.00
Foreign Postage 2.00
Single Copies . . . . . 10 Cents

In requesting change of address, give old as well as new location

Subscriptions may begin at any time and be sent to

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
No. 61 Market Street, Chicago, Illinois.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Henry P. Newman, 100 Washington St., Chicago, Ill., sending him a certificate or statement that the applicant is in good standing in his own Society, signed by the President and Secretary of said Society. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership.

On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Those now members of the Association should send their annual subscription direct to the Treasurer, Dr. Henry P. Newman.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof-sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 61 Market Street Chicago.

Original communications are accepted with the understanding tha they are exclusively contributed to this JOURNAL.

SATURDAY, DECEMBER 16, 1899.

TREATMENT OF DIPHTHERIA WITH ANTITOXIN.

While there has been little published in the medical journals recently on this subject it must not be supposed that the value of antitoxin in the treatment of diphtheria is not just as much appreciated as when so much was being written. As we publish this week a symposium on diphtheria, it seems an appropriate occasion to refer to the matter more fully in these columns.

Five years have now elapsed since the more or less general adoption of the antitoxin treatment of diphtheria, and the results have in every way justified the earlier anticipations. Wherever this truly specific remedy has been properly employed on any considerable scale, the previous mortality has been cut in two; and the testimony to this effect has come, not from one observer, nor from one community, nor from one part of the world, but it is well-nigh universal and unanimous. It must, however, be borne in mind that the antitoxin is both curative and prophylactic *only* against diphtheria, and experience has taught that in order to obtain the best results the treatment must be instituted early. The requirements are thus exceedingly simple, but such as they are they must be complied with strictly, and in no half-hearted nor uncertain manner. The dangers are comparatively insignificant and transitory in nature, and are confined principally to cutaneous rashes, articular swelling and pain, albuminuria, elevation of temperature, local irritation at the site of injury, and possibly slight glandular enlargement. It can be conceived that excessive doses of the antitoxin may cause some disorganization of the blood, but this has been observed but rarely, and is attributable rather to the large amount of serum necessarily required, and not to the antitoxic agents themselves. It is no longer believed that the death of the child of Professor Langerhans, of Berlin, a few years ago, following an injection of antitoxin, was due directly to this, as other conditions were present at least equally if not more competent to bring about the unfortunate result.

For immunizing purposes from 500 to 1500, and for curative purposes from 1500 to 4000 antitoxin-units should be injected, in accordance with the age of the patients and other circumstances. The employment of the larger dosages is no longer attended with difficulty, as concentrated sera are now readily obtainable. The injection should be made into the subcutaneous connective tissue with a properly sterilized syringe, suitable care being taken to avoid a blood-vessel. The surface of the abdomen, the lumbar region, and the external aspect of the thighs are good situations for the injection. Administration by the mouth has also been proposed, but absorption by this route is slower, and the results are necessarily less speedy and less trustworthy.

In connection with the discussion of diphtheria, before the Section on State Medicine, at the last meeting of the AMERICAN MEDICAL ASSOCIATION, and the publication of the papers read on that occasion, as above, we beg to present some of the more recent facts. As Munn (p. 1522), the efficient and energetic health commissioner of Denver, points out, the mortality from diphtheria in that city has been reduced from 28.7 per cent. in 1894, before the antitoxin was employed, to 8.8 per cent. in 1898 (3.5 per cent. in the cases treated with antitoxin, and 16.6 per cent. in those in which the antitoxin was not employed); and from 36.4 per cent. in the six years preceding the use of the antitoxin to 11.5 per cent. in the four years during which the antitoxin was employed. The contrast is all the more striking when it is pointed out that among the cases treated during the last four years with the antitoxin the mortality was only 4.9 per cent., while among those not so treated during the same period, the mortality was 18.6 per cent.

In the city of Chicago there were in the ten years from 1886 to 1895, before the antitoxin was generally used, 14,175 deaths from diphtheria, a yearly average therefore, of 1417; while in the three years from 1896 to 1898, the number of deaths was 2552, a yearly average therefore, of 851—thus, an annual saving of 566 lives. Among 4071 cases treated with the antitoxin during three and a half years the mortality was less than 7 per cent., as compared with a previous mortality of nearly 50 per cent.

According to Biggs[1], the mortality among 3073 cases of diphtheria treated in New York City, with the antitoxin, from Jan. 1, 1895, to Jan. 1, 1899, was 13.9 per cent., as compared with a mortality of 29 per cent. in the year 1894. A similar reduction in mortality is also reported from San Francisco.

[1] Medical News, July 22, 1899.

Statistics prepared by Goodall[2], show that the mortality from diphtheria in London has fallen, since the introduction of the antitoxin-treatment in 1894, from 24.7 per cent. to 17.4 per cent. The reduction was greater in the hospitals under the control of the Asylums Board, where formerly the mortality had been greater, than in the city at large. Recovery occurred in 72 per cent. of laryngeal cases, as compared with 33 per cent. formerly—in 80 per cent. not operated on, as compared with 45 per cent. formerly, and in 63 per cent. in which tracheotomy was required, as compared with 28 per cent. formerly. Besides, laryngeal and pulmonary complications were less common in cases treated with the antitoxin than otherwise.

The mortality from diphtheria in Berlin has decreased from 27 per cent. in 1894 to 15 per cent. in 1897. It has been halved also in Paris, and in a large number of German cities from which statistics have been collected. Thus, among 44,631 cases of diphtheria, treated with the antitoxin during 1895, 1896, and the first three months of 1897, the mortality was 14.6 per cent., while among 6507 treated without the antitoxin the mortality was 34 per cent.

The foregoing figures should suffice to convince the most skeptical, if any there yet be. The good results from the treatment of diphtheria with the antitoxin are obtained not alone in the hospitals, but also in private practice, and they are appreciable not merely in the mortality-reduction, but also in the general course of the disease. By the timely and intelligent employment of the antitoxin, epidemics can be controlled by prophylactic injections, severe cases are rendered mild, laryngeal complications are less common, and when they occur are less severe and more amenable to surgical treatment. Paralysis, paradoxically, appears to be a more common sequel in cases of diphtheria treated with the antitoxin, but this is probably due to the fact that recovery takes place in cases so severe that death would otherwise occur. In a word, no more powerful resource than the antitoxin of diphtheria has been added to the armamentarium of the physician since the discovery and introduction of vaccination for smallpox.

[2] British Medical Journal, Feb. 4, 1899.

INTERCELLULAR STRUGGLES AND ANTICELLULAR SERUMS.

The animal organism is regarded as a state, composed of various, more or less independent elements, which have subordinated their own interests in order to accomplish functions of vital importance. But the citizens of this cellular state do not always live in perfect harmony. There is in reality a sharp struggle among the cells for the most favorable conditions of nourishment and multiplication. Sometimes the cells devour each other and enter upon more extensive intercellular hostilities, concerning which but little in reality is known. Interesting observations are being made on the fate of diverse cells of animals when introduced experimentally into the bodies of other animals either of the same or of different species, and probably some light has already been thrown upon the nature and the mechanism of intercellular struggles. Metchnikoff, in an interesting contribution to this question[1], gives the results of experiments on the absorption of spermatozoa, and of red blood-corpuscles, made with a view to determining the rôle of phagocytes and the changes which occur in the organism in cellular resorption.

Spermatozoa, homologous or foreign, introduced into the abdominal cavity of guinea-pigs, are promptly taken up by large phagocytic cells while still possessed of ameboid movement and presumably still alive. The intracellular digestion of spermatozoa is succeeded by the appearance, in the peritoneal fluid and in the serum of the blood, of substances which arrest the movements and agglutinate the spermatozoa. Landsteiner[2] and Pitfield[3] have also described the agglutination of spermatozoa by foreign serum. The agglutination and solution of the red blood-corpuscles of one animal by the fluids of another animal of a different species have been extensively studied of late, because of the light these phenomena cast upon analogous processes in bacterial infection and immunity (Bordet, v. Dungern, Ehrlich and Morgenroth, etc.). Corresponding to the hemolytic ferments, which are present, or produced, in these conditions, antihemolysins have also been shown to develop under certain circumstances. Heretofore the leucocytes have not been regarded as playing any direct rôle in the destruction of foreign red corpuscles, but Metchnikoff shows quite conclusively that when the nucleated blood-discs of the goose are injected into the guinea-pig, the large mononuclear leucocytes take up and eventually dissolve the corpuscles, nucleus and all. Certain facts also indicate that the agglutinating and hemolytic substances (for the corpuscles of the goose), which then appear in the serum of the guinea-pig, are closely connected with excretory processes on part of the phagocytes.

These and similar observations led Metchnikoff to conceive the idea that it would be possible to obtain serums against all kinds of cellular elements. Landsteiner has previously expressed a like notion. And Metchnikoff has already succeeded in demonstrating the development of antileucocytic serum, after the resorption by its macrophages of particles of the spleen of rats inserted subcutaneously in the guinea-pig, and also after similar experiments with the mesenteric lymphatic glands of rabbits. These antileucocytic serums are specific in their action, that is, they destroy only the leucocytes of the rat and of the rabbit. The fertile mind of Metchnikoff suggests a number of uses to which anticellular serums may be put in the study of the physiology of organs whose functions are now obscure, and of the reactions of the organism to microbes.

Probably, interesting studies with these methods will soon appear. Metchnikoff, impressed with the rôle of

[1] Am. de l'Inst. Pasteur, 1899, xiii, 737.
[2] Cbl. f. Bakt., 1899. [3] Lancet, 1899.

mononuclear phagocytes in the resorption of morphologic elements introduced into the organism, also believes that macrophages take a decidedly active part in the atrophic and cirrhotic processes, which, though of such common occurrence, yet constitute an unsolved problem in pathology. These processes are all characterized by a replacement of more highly differentiated cells by connective tissue associated with an accumulation of monocular cells. At present it is assumed that the cells, which disappear and whose place is taken by fibrous tissue, have been rendered useless by various causes, especially of a toxic nature, and that the fibrosis is a secondary process of a teleologic kind. Metchnikoff advances a new theory in regard to these changes, to the effect that they are the result of intercellular hostilities, in which the large phagocytes, without consideration or pity, devour those cells, which can not resist the voracity of the phagocytes, no matter whether the cells in question are useful to the organism or not. Should this genial theory prevail, practical medicine may be called on to endeavor to maintain peace and harmony in the organism when disrupted by the preponderance of certain cells, such as the macrophages, and it may be that the anticellular serums referred to will find practical application in a series of maladies which now baffle our therapy. At all events, the suggestion of intercellular struggles of this sort, and of their possible rôle in pathologic processes, is a welcome one, which may lead to renewed and fruitful study of the atrophic and cirrhotic processes.

THE NURSE'S RESPONSIBILITY.

The surgical nurse is a very important person in an operation, not possibly as important as she may sometimes think she is, but still one that has a very useful and responsible function to perform. The fact is suggested by a case that is reported of the not unheard of accident of a sponge being inadvertently left in a woman's abdomen after the operation. A large mass of testimony was collected from high surgical authorities to the effect that the counting and care of the sponges is the especial duty of the assisting nurse, and that accidents such as the one mentioned should be properly credited to her neglect. This may be true enough, but to the public generally the surgeon is to blame for whatever goes wrong in the operation, notwithstanding that in this as in other minor details he can not always give the due attention to insure their proper execution. Hence the importance of a reliable and thoroughly careful nurse, and her value when found. It too often happens that nurses do not fully appreciate their responsibilities, and their liability to failure in them. If a little more stress were laid on this point in the addresses to training-school graduates, at the expense perhaps of some of the conventional glorification of the nursing profession, it would be no loss. We have had experience enough to know that nurses, estimable and indispensable as they are, are not impeccable angels but mortal women with various feminine and epicene failings that call for eternal vigilance on the part of the professional employers. These remarks are not intended as disparaging to the class, but simply as a wholesome reminder of these human imperfections and the constant need that they should be met and as far as possible overcome.

TRANSMISSION OF TUBERCULOSIS.

It will scarcely be contended that the air-passages, though perhaps the most important, constitute the sole channel through which tuberculosis is acquired. Volland[1] calls renewed attention to an additional mode of transmission, which is applicable both to tuberculosis as such and also to scrofulosis. He points out that the latter affection is essentially a disorder of childhood, not appearing until after the first, and prevailing largely until the fifth year, thereafter diminishing in frequency; and he relates this distribution of the disease to infection conveyed through the hands soiled in creeping and playing on the floor, and the like. The scrofulosis thus acquired may become manifest, or it may remain latent, perhaps to break out later in life, under suitable conditions, as tuberculosis. Whether this explanation is applicable to a large number of cases or not, the prophylactic measures that it suggests should not be ignored or neglected, namely, that the greatest care should be taken to avoid the soiling of floors and other surfaces on which children are permitted or are likely to play and creep, and always to keep the children's hands as clean as possible.

THE ANTIVIVISECTION BILL IN CONGRESS.

The antivivisectionists have, with the reassembling of Congress, renewed their agitation, and their spokesman in the Senate, Senator Gallinger, has again introduced their bill (see our "Miscellany" columns, this week) to regulate experiments in the District of Columbia. While this is speciously drawn and apparently innocent in most of its provisions, its real object is to satisfy the ultimate purpose of the zoöphiles as an entering wedge in the effort to prohibit vivisection altogether. Any one who has read their literature can readily see that no halfway measures will satisfy them, and that this is only a part of a general movement to enact prohibitory laws throughout the United States. As drawn up, the bill, if passed, could seriously embarrass the experimental work of the U. S. Agricultural Department as well as that of the Army and Navy and Marine-Hospital medical laboratories, and for this reason, as well as because it is only a step to something still more radical it should be opposed by the united medical profession and all others who regard human life and welfare. Zoöphilism, of which such attempted legislation as this is a manifestation, is a curious phenomenon, as has often been pointed out, perfectly compatible with the grossest inhumanity, and it would be no credit to us if it were permitted to thus carry out its unphilanthropic schemes. The interests of the animals they profess to love so much would be themselves sacrificed if the advocates of this bill should succeed in crippling the work of the Agricultural Bureau of Animal Industry, but they are themselves not open to even this ra-

[1] Berlin. Klin. Woch., Nov. 20, 1899, p. 1031.

tional argument. It is well, however, to use this fact in the better education of the public as to the real status of the question. As regards the interests of humanity there ought to be no need of argument. There should be a united opposition of the whole medical profession against the proposed measure, and if we use our influence as we should, it must fail to become a law.

CLUB DOCTORING AGAIN.

It is announced from Boston, that a number of "leading physicians" have organized a "Union Medical Service Company," which for a small monthly fee will entitle the subscriber to medical and surgical services whenever required. Branch offices are to be opened in every city in the United States and Canada, and the State of Massachusetts has already been portioned out into districts with one or more physicians to each, who are to be at the beck and call of the patrons of the society day and night, and to obtain their remuneration through the company. This grand scheme of exploiting the medical profession is announced in the daily press as a great advance, the item announcing it being headed "For the Workers," as if appealing especially to the much overworked labor vote, and the privilege of doctors' calls *ad libitum,* it is assumed, will do away with the trifling with serious disorders by home remedies; hence there will be an improved public health and a lowered death-rate. It, therefore, goes before the public as a highly philanthropic and benevolent project in which only the doctors are to be sacrificed for the public good, while the "company of leading physicians" will, it may be, reap a reward for their good works in appreciated stocks and dividends. There are possibilities enough of evil in this design to arouse the profession, and it will be of interest to see how far the profession and the public—especially the former—will be taken in.

A FALSE STEP.

The students of the medical department of the Iowa State University propose, it is said, to petition the legislature to modify the law that requires them to pass a state examination before being allowed to practice medicine. They argue that the university examinations for their degrees are practically state examinations, and that graduates from their institution should be excepted from the operation of the law. It is to be hoped that no such modification will be made. The arguments they bring for it are such as should have no weight with the legislature. The statement made in their petition, as reported, that adjacent states recognize the diploma while Iowa does not, is a misrepresentation in that it implies that such recognition is general, and not confined to states that have not as yet made their practice laws as rigid as those of Iowa. The introduction of such a plea should condemn the whole movement on the principle of *falsus in uno falsus in omnibus.* The medical department of the University of Iowa stands, in the light of this petition, in the position of a school that turns out inferior graduates who can not pass the state examinations, and it will, therefore, win no prestige from this performance. If its faculty members are wise, they will do what they can to suppress or to counteract this depreciation of their institution. It is certainly not a credit to the teachers if the students unduly fear state examinations, and it will be a still greater pity if the state legislature is thereby induced to undo good work already done.

DRUGGISTS' RESPONSIBILITIES.

A suit was recently brought against a Pittsburg druggist[1] by a woman who asked $20,000 damage for the death of her daughter, which she claimed was due to a headache powder sold by the defendant. The judge non-suited the case, holding that the druggist was not guilty of any negligence and incurred no responsibility for the effects of the drug, even admitting that they were such as were claimed. The case caused much local comment and the question is asked: Who is responsible if the vendor is not, and what protection has the public against accidents from dangerous drugs not sold as such, but put out as harmless remedies for self-prescription and general use? The general opinion among wholesale and retail dealers in drugs appears to be, according to interviews reported in the Pittsburg papers, that the seller can not be held responsible, at least not for the dispensing of unbroken packages bearing the U. S. revenue stamps, as is the case with the copyrighted and proprietary remedies. Since this suit was begun, some of the Pittsburg druggists have affixed a label disclaiming responsibility on the packages of proprietary remedies, and they are interested to learn whether by so doing they have been in any way transgressing the federal law in regard to stamped articles. The court's action seems to place responsibility, if anywhere, farther back than the seller, but the case may be carried to a higher court, and the questions it involved are still far from being fully settled. As far as the public is concerned it has one safeguard, easy to apply, that is, not to buy such preparations. In this country, more than in any other, people are supposed to look out for themselves, and heretofore this has seemed to be the practical if not the legal principle in these matters. Now that the questions have been raised, it may be that we shall obtain some decisions or ultimately some legislation for the public protection against dangerous, or possibly dangerous, popular remedies, secret or otherwise.

BOVINE AND HUMAN TUBERCULOSIS.

The laws passed by some state legislatures, requiring the slaughter of tuberculous cattle, are, it appears likely, to be attacked in the coming sessions. The dairy and cattle trade interests, it is said, are already organizing to call for their revision, as it is claimed that as they exist at present they sometimes cause undue hardship and expense to the farmers and others. A correspondent in one of the leading agricultural journals calls for an investigation of tuberculosis in country and especially dairy districts, to show if possible what are the actual facts in regard to the transmission of the disease from cattle to man. It must be proved, he claims, that there is to be found at least as large a percentage of tuberculous cases, known to be such, from the consumption of milk, butter, cheese, etc., in the farming districts as is credited to this cause in city statistics, before we can

[1] Journal, December 9, p. 1500.

positively say the peril of bovine tuberculosis is real. It would seem that it ought to be easy to get these facts from country practitioners who should know their patients better even than does the city doctor, but so far there has been a dearth of information from these sources. A careful and unprejudiced investigation in our large asylums, allowing duly for the special character of their population, would also be of use. At least one high veterinary authority has expressed more than a doubt as to the possibility of this transmission, and it can not be said that the evidence is yet fully satisfactory to any impartial observer, however fully he may be convinced of its occurrence. It is claimed, on the other hand, that on dairy farms where every opportunity for the acquirement of tuberculosis by inhalation or ingestion ought to exist according to the accepted notions, the disorder is rare, and some even claim, almost unknown. A thorough study of the subject in all its aspects and possibilities is certainly desirable. Consumption is especially a disease of the cities, we know, and it is mostly studied there; it would be well if we also had an equally thorough study of its incidence in the rural districts where this question of its causation ought to be more easily elucidated.

Medical News.

MANKATO, Minn., has just dedicated a new hospital—St. Joseph's—costing $50,000.

PROFESSOR BOSE of Giessen has resigned the chair of surgery, on account of poor health.

DR. YERSIN has been sent to Java on a special scientific mission, by the Indo-Chinese government.

DR. JACOB E. SHADLE and wife, St. Paul, Minn., sailed from New York, December 9, to spend the winter in Egypt.

DR. WALTER LESTER CARR will assume the editorial management of the *Archives of Pediatrics*, with its January number.

A WOMAN in Omaha, Neb., has brought suit for divorce on the ground that her husband insisted on treating their sick child by "Christian Science."

THE PROSECTOR of the chair of pathologic anatomy at Moscow, Dr. Kischenski, has been sent by the university to study the museums and institutes of his specialty in the large cities of Europe, for a year.

THE MEDICAL departmtent of the Western Reserve University is recipient of $12,000, from H. N. Hanna, for an endowment of a chair in medical jurisprudence.

THE HYGIENIC reports of Paris, for the year 1898, record 1500 persons having been bitten by dogs supposed to have been mad. Eight of these persons died.

OLEOMARGARIN, it is said, is being sold by the wholesale in different parts of New Jersey. Several tons of the article have been seized, and this has made dealers very careful.

MRS. KATE GOODMAN, Reading, Pa., was bitten on the hand by a fox terrier about nine weeks ago. The wound was cauterized, but December 1, she became violent and death occurred December 4, from hydrophobia.

THE FACULTY of Physicians and Surgeons of Glasgow was founded in November, 1559, the charter being granted by James VI, and its tercentenary was celebrated by a dinner on November 29.

WHILE the football season is not yet closed, eleven deaths are already recorded; some have been ruined for life, physically, and minor injuries too numerous to mention have occurred. And yet the interest in the game is greater than ever.

THE BRITISH bark *Ravenscourt*, which sailed from Panama eighty days ago, arrived in Port Townsend, Wash., December 7. Yellow fever broke out among the crew a few days after the vessel sailed and three sailors died. The vessel is now in quarantine.

DR. ARCHANGELSKI of St. Petersburg left his entire fortune to the national Society for the Preservation of the Health of the People, to start an endowment to "assist young physicians along their first steps in their difficult career."

ACCORDING to the *St. Petersburg Med. Woch.*, 9200 roubles have been appropriated by the Government to defray the expense of publishing and forwarding the report of the Moscow International Medical Congress.

A PUBLIC-SPIRITED man of Bombay, India, has given $1,000,000 for the establishment of a university in that city. A committee has been appointed to look for a desirable location for the buildings. The name now proposed for the institution is the Indian University of Research.

THE PARIS *Gazette Medicale* draws a comparison humiliating for France between the suppression of the sale of liquor in the buffets along the line of the Southern Pacific and the newly inaugurated bars on the trains of the lines to the west of Paris, owned and run by the Government.

AT THE next meeting of the British Medical Association, commencing July 31, 1900, Dr. Pye-Smith will deliver the address in medicine, Mr. Frederick Treves that in surgery, and Dr. W. J. Smyly, at one time master of the Rotunda Hospitals, Dublin, that in obstetric medicine.

A COMMITTEE of the Frederick City (Md.) Hospital Association is visiting Washington, Baltimore and other cities for the purpose of inspecting hospitals, and to examine plans and cost of construction. The Association has raised a large sum for providing Frederick City with a much needed hospital.

THE VIENNA medical *Doctorencollegium* celebrated the five hundredth anniversary of its foundation, December 10, with a banquet, medals and a jubilee sketch of its history. "Its benevolent institutions represent a capital of 3,500,000 gulden, and it is in every respect a blessing to the profession.

THE NEW sewage farms around Paris have contaminated wells in the district, and the residents are clamoring for damages and reparation in the shape of a pure water-supply to be installed at the city's expense. The engineers, however, claim that the trouble is only temporary, until the lay of the land is fully ascertained, when appropriate drainage will divert the water from the well supply, as in the longer established sewage farms.

DR. KOSSINSKI, professor of surgery at Warsaw, and Dr. Solmann, who has a private surgical-gynecologic hospital, were sued for damages—42,000 roubles—by the family of a patient who had died from the effects of a forceps left in her abdomen after an operation. The lower court acquitted the defendants, but an appeal to a higher court has resulted in the condemnation of Dr. Solmann to a penalty of 920 roubles and severe

censure by the authorities. Professor Kossinski was acquitted.

IT IS said that Dr. Jay W. Seaver, physical director of Yale College, has completed his examinations of the students of the freshman class, and finds the average weight 137.9 pounds; the average height 5 feet 8.2 inches, and the average lung capacity 263 cubic inches.

THE NEW quarters of the Paris Students' Association, 43 rue des Ecoles, were formally opened by the President of the Republic, the deans of the various faculties and other notables, November 27. Medicine, law, belles lettres, etc., each has a separate reading room and library. The association was founded sixteen years ago. The inaugural exercises were followed by a "gala matinee" in the amphitheater of the Sorbonne across the way, and a banquet in the evening.

AN OSTEOPATH in Lincoln, Neb., has just been convicted of practicing medicine without a license. He has appealed to the supreme court, claiming that he does not practice medicine in his treatment. The decision in the case will be watched for with special interest, for the Nebraska law is very explicit in defining the meaning of the words "practicing medicine," and the methods of the osteopaths are distinctly given as coming under the meaning of the words.

IT IS reported that a Camden, N. J. girl, 16 years of age, at the time suffering from a burning fever, wandered through the streets the night of December 3, without being able to receive treatment from any of the hospitals. Finally she was found by the wife of the overseer of the poor, who cared for her. The overseer visited three hospitals with the girl, but was unable to gain her admission. She was probably suffering with scarlet fever, or from rötheln.

THE STATE insane asylum, near Harrisburg, Pa., is said to be again in an overcrowded condition, and some of the patients are compelled to sleep on the floor. The room ordinarily accommodates 700 persons, but at the present time there are 900 being cared for. Applications are being made daily and there are a large number on the waiting list. It is thought that the condition of overcrowding has resulted from taking the insane patients from the county almshouses several years ago and placing them in state insane asylums.

RELATIVE to a comment on the existence of smallpox in Topeka, Kan., in a previous issue of the JOURNAL (see December 2, p. 1437), we are now informed by a physician of that city that last summer he had a case of their so-called "chicken-pox" or "Cuban itch," and has since endeavored to get the city physician and secretary of the State Board of Health to quarantine, but failed until about one week ago, when quarantine was commenced, he having in the meantime a case under treatment in Potwin, the best resident portion of Topeka.

THE CREATION of a section of urinary surgery in the coming international congress is attributed to the efforts of Professor Guyon of Paris. This section will meet at his clinic at the Hôpital Necker. A committee of several of his students, both French and foreign, proposes to present him with a souvenir medal on the occasion of the opening of the congress. All the friends of Professor Guyon are invited to co-operate and a subscription has been opened. The minimum accepted is twenty-five francs. This entitles the subscriber to a bronze or silver duplicate of the medal.

A COLORED "voodoo doctor," who for some time has been practicing his tenets in Camden, N. J., was put on trial for manslaughter during the past week. In a raid of the man's house by the police, there was found a weird collection of things, including animal remains, herbs, charms and medicines. The case attracted attention because it was learned that a woman who had gone there for treatment had died in the house, and an examination disclosed that death had been due to hemorrhage, and that there were evidences of criminal malpractice. The man was sentenced to eight years in the penitentiary and to pay a fine of $1,000.

THE PRACTICE of medicine in Calabria, Italy, has its drawbacks. In November, in the commune of Cataugaro, a highly respected physician, Dr. Giorgio Vaccaro, was assassinated, and his brother, coming to his relief, was also shot. At Borgia, in the same region, and about the same time, Dr. Pietro Chiriac was stabbed by a patient he was attending. The Rome correspondent of the *Lancet*, who gives these facts, remarks that Calabria shows that in the case of a professor considered all the world over as a "sacro-Sanct" against bodily aggression she can "go one better" than the worst of the semicivilized or wholly savage of her sister commmunities.

THE ILLINOIS Supreme Court has denied the motion for a rehearing in the case of the Independent Medical College vs. the People. This ends the proceedings, and the late diploma-mill dies "unwept, unhonored, and unsung." Future legal proceedings, interesting it may be, will be looked for in sections where its diplomas have been sown, in some of them very numerously. The Michigan State Board of Examiners has a problem on its hands regarding them, and they are liable to crop up elsewhere or wherever there is a legal loophole available for their holders to utilize. It is to be hoped that this final settlement of the concern in Illinois may similarly affect matters elsewhere.

THE EASTON (Pa.) court has issued an order to the effect that hereafter all claims for board and maintenance of patients from Northampton County, who are cared for by the state institutions for the insane, must be settled at the expense of the relatives. The law directs that the following be made liable for these bills: father, mother, grandfather, grandmother, children or grandchildren in case any of them possess property. This law was passed in 1836 but has not recently been enforced. It is said that the above county alone paid, last year, the sum of $11,192.82 for the support of indigent insane and that fully one-half of this sum should have been borne by relatives.

ACCORDING to *Semaine Med.*, the new regulations in regard to the transportation of persons with infectious diseases in Germany go into effect January 1. A special car must be engaged for persons with smallpox, petechial typhus, diphtheria, scarlet fever, cholera, or lepra. A separate compartment, with water-closet attached, must be engaged by persons with measles, whooping-cough or dysentery. Transportation of persons with the plague is absolutely forbidden. If persons are merely suspected of the above diseases, their transportation will depend on the medical certificate which they may produce. Persons with a visible affection, or who for other reasons are liable to annoy other passengers, need not be transported unless they pay the price of a special compartment, and unless such a compartment can be placed at their disposal on the train.

A PARENT applied to have his children admitted to the public schools in Philadelphia, but refused to comply with the law in regard to compulsory vaccination.

Superintendent Brooks cited the act of the assembly prohibiting the admittance of children to school unless vaccinated, and further served notice on him that in compliance with the compulsory education act he must send his children to school. The matter was then referred to the Committee on Elementary Schools for decision, but up to this time no action has been taken in the matter.

TYPHOID FEVER IN MILK.—It is said that County Medical Examiner, D. G. C. Gable, York, Pa., has recently made an investigation of the outbreak of typhoid fever occurring at that place, and out of 21 cases investigated, 20 have been found to have derived the infection through a spring three miles north of the city. This spring is located on the farm of a dairyman, and the cases so far reported have nearly all occurred among the patrons of his route. Since April 14, typhoid fever has been prevalent among the members of his family, and his father, mother and two children have succumbed to the disease. An investigation showed that the dejecta had been thrown near the spring. The milk of this dairyman has been condemned until the State Board of Health takes action in the matter.

DR. R. HARVEY REED RESIGNS.—A change in the management of the Wyoming General Hospital of Rock Springs, Wyo., will take place the first of the year, owing to the resignation of Dr. R. Harvey Reed as medical director, to take effect Dec. 31, 1899. In addition to Dr. Reed's resignation, the chief nurse and chief house surgeon have already resigned, and we understand that several of the pupil nurses will sever their connection with the institution at that time. Being a state institution it is under the conrol of a political board, with headquarters at Cheyenne. Up to Oct. 16, 1897, at which time Dr. Reed assumed charge of the institution, 272 patients had been treated during the three years of its existence. During his first year's administration 313 were admitted and treated in addition to the eight carried over from the previous administration. During his second year's service 378 patients were admitted and treated, including 28 from the previous year, making a total of 699 treated in the institution during the two years of his administration as against 272 in the three years prior.

THE PLAGUE.—Dr. Vital Brazil, a prominent bacteriologist of S. Paolo, has been stricken with the plague, while attending patients at the isolation hospital at Santos. The Brazil authorities have enlarged the Vaccine Institute for the production of antiplague serum and sent Dr. P. Affonso to Europe to study the best methods of preparation and commence work in three months. France has refused their request for further supplies of the serum on account of possible needs nearer home. A bounty of ten cents is paid at Santos for every rat killed. In his official report on the examination of the plague stricken ship, *J. W. Taylor*, Passed Assistant Surgeon Geddings states that the cultures made from the two patients recovering from the disease yielded negative results as regards the appreciable development of specific microbes, but afterward gave rise to the disease in guinea-pigs. As indicated by the official reports, there has been little change in the plague situation since last week. The marine-hospital service reports the death, at Trieste, Austria, of a sailor on an Ottoman liner. Ten deaths are reported at Asuncion, Paraguay, October 7-24. During the week ended November 25, there were 16 new cases and 5 deaths at Oporto. Mauritius reported 37 new cases and 39 deaths. No new cases are reported from Egypt. On account of the proximity of the pest to their borders, the Russian authorities have formally installed a laboratory for research and work on the plague, on an island at Cronstadt, and forbidden all other laboratories and private investigators any work of the kind.

MRS. EDDY, THE AGGRESSOR.—According to the press, Mrs. Mary Baker Eddy, the patron saint of the "Christian Science" order, has scored her first point in the case of Woodbury vs. Eddy, in which a suit for libel is pending. In this instance Mrs. Eddy, through her counsel, was able to prove that the plaintiff had in advance of the date of the trial sent out certain documents which would prejudice the case in the minds of the jury and in contempt of the court in Boston. This charge was admitted to be correct by Mrs. Woodbury, who subsequently threw herself on the mercy of the court, stating that what had been done was done through ignorance and for which an apology was offered. Should this proceeding be kept up all during the trial, in which $150,000 has been claimed as a propitiation for certain remarks made by Mrs. Eddy, the trial will end in a grand fiasco, and doubtless will be further encouraged under the claim of persecution. Whether one is willing to admit it or not, the "Christian Science" movement is gaining in numbers, and its standard is being planted in a way which seems damaging to the morals of its followers. During the past week notice was sent to the press of the dedication of a church in New York, erected by that sect at a cost of $500,000. At the dedication it was said a hymn was sung composed by Mrs. Eddy, and later extracts were read from her book, "Science and Health. The movement seems well organized, and through the energy of the *Medical News* it has been found that back of it all lies an astute lawyer whose advice is sought on doubtful points so that it may be a long time before the strong arm of the law can overcome such a widespread hallucination.

Baltimore.

CHARLES L. REESE, Ph.D., has been elected lecturer on chemistry at the Woman's Medical College.

A SALE of fancy articles, confectionery and flowers was held the 7th and 8th for the benefit of the Hospital for Crippled Children.

DR. WILLIAM R. MCKNEW had a shoulder blade broken and received other injuries by having his buggy struck by a street-car on the 7th inst.

AN OLD MEDICAL SCHOOL.

The first medical school and dissecting-room building in the city has been discovered and photographed. It is a long narrow two-story brick structure, and was built by Dr. Charles Frederick Wiesenthal, physician to Frederick the Great, who came to Baltimore in 1755, when this was a small village. He died here June 1, 1789. The building was probably erected shortly after his arrival. We know of its use about 1770. Dr. Wiesenthal was an accomplished and learned physician who jealously maintained the dignity and honor of the Baltimore profession. He was termed the "Sydenham of Baltimore," and may be considered the father of the profession here. His services during the Revolution were of inestimable value to Maryland. After his death the school was continued by his son, Andrew, until his death in 1798, when it was sold.

New Orleans.

DR. C. FAGET, JR., has removed with his family to the Island of San Domingo, where he purposes practicing medicine.

DR. E. A. ROBIN, recently married to Miss Mary Titus, is absent from the city on a wedding trip to the eastern cities.

DR. T. F. RICHARDSON, assistant surgeon in the U. S. Marine-

Hospital Service, has been transferred from the Nuevitas, Cuba, quarantine station to that on Reedy Island.

MUCH INTEREST has been aroused by the anticipated coming of the coffee-laden steamer, *Willowdene*, from the plague-infected port of Santos in Brazil. At a meeting of the Louisiana State Board of Health, the 8th, measures were taken for due precautions. It is to be hoped that, with the help of the New Orleans Board of Health, the co-operation of which does not seem to have been invited, every effort will be made to keep this little known but dreaded scourge out of our country.

THE SOUTHERN Surgical and Gynecological Association met in this city last week. The Association was entertained by the local profession at a lunch at the Boston Club, Tuesday noon, and at the French Opera, Tuesday evening. On Wednesday afternoon the members were treated to a boat ride, with lunch on the boat, and a visit to the Milliken plantation.

Chicago.

THE EXAMINATION for externes of Michael Reese Hospital has been postponed until April, 1900.

THE RECEIPTS of the bazaar held for the purpose of furnishing the new Wesley Hospital are estimated at $10,000.

ONLY ONE case of smallpox has been discovered this week although the city has been greatly exposed during the past few weeks.

AT A meeting of the citizens' committee for the erection of a hospital for the treatment of consumptives it was reported that nearly $10,000 had been subscribed.

THE ILLINOIS State Board of Health has begun a crusade against the keepers of lodging houses for violation of the law to prevent the overcrowding of these establishments. Twelve arrests have been made.

HEALTH OF STUDENTS.

An examination at the Normal School shows that out of 300 young women students there are only sixty-seven who are in perfect health. Many are reported to be suffering from disabilities that seriously interfere with their work and efficiency. This condition is regarded by the authorities as due to the excessive amount of study with minimum recreation. It has been suggested as a sanitary measure that the number of studies be materially reduced.

PUBLIC BATHS.

A MOVEMENT has been inaugurated by residents of the west side toward the establishment of a free bath-house for the poor of that section of the city. The sum of $5000 has been collected for the purchase of a site and the city council will be asked to appropriate a sufficient sum to erect a building and furnish suitable apparatus. It is estimated that $1200 will be required. Several members of the council favor the plan of making the bath a part of the public schools of that locality. The bath could be used by the children during the day and by the working people during morning and evening hours.

MORTALITY STATISTICS.

According to the weekly bulletin of the health department, the mortality for the past week was 10 less than that of the week preceding. This was 47 in excess of the corresponding week of last year. The causes of death which show an increased mortality are: diphtheria, scarlet fever, cancer, pneumonia, convulsions and suicide. There were 7 more deaths from diphtheria and 4 more from scarlet fever, as compared with the preceding week. "Influenza," says the bulletin, "is beginning to be mentioned more frequently as a complicating cause, mostly associated with acute respiratory affections. The excess of births over deaths was 202, there being 618 births reported during the week.

Cincinnati.

WARRANTS have been sworn out by the Food Commissioner for the arrest of eight persons charged with selling oleomargarin.

THE MONTHLY meeting of the directors of Longview Insane Hospital was held December 7. There are 1076 patients in the hospital.

THE MONTHLY report of the city infirmary shows that there were 891 inmates in that institution, November 30; 7 died during the month; 22 were discharged and 42 were admitted.

MURRILL FLENNER, who is studying medicine at the Miami Medical College, has received an appointment as guard of the American Buildings, Paris Exposition. He will continue his studies in Europe.

AT THE regular monthly meeting of the Board of Trustees of the Cincinnati Hospital, Dr. Frank B. Cross was elected hematologist, in place of Dr. S. P. Kramer, resigned. The trustees have extended the term for nurses of the training school from two to three years.

THE FIRST case of caisson disease that has occurred in the building of the new water-works plant was reported at the City Hospital, December 8. The victim had been working in a shaft 120 feet below the ground surface. The peculiar type from which he suffered was a paraplegia.

OWING TO the crowded condition of the Asylum for Epileptics, at Gallipolis, the disposition of this class of patients is a serious question as the new law in effect in June provides that no epileptics shall be sent to insane asylums or infirmaries.

HEALTH REPORT.

According to the health department the epidemic of measles has practically disappeared. There were but 22 new cases and no deaths last week. There was a decrease of 44 in the number of contagious diseases reported, as compared with the corresponding week of last year. There were 28 deaths as against 31 for the same week in 1898 and 25 deaths from consumption with 8 new cases reported.

Columbus.

THE STATE Board of Health has arranged with sixty-seven physicians of the state to address the farmers' institutes this winter, on the subject of the prevention of tuberculosis in cattle.

SUIT FOR DAMAGES.

As a sequel to the controversy existing between Dr. J. F. Baldwin of this city and the Ohio Medical University, Dr. Baldwin has been sued for $10,000 by the heirs of Mrs. Nancy Taylor, who it is claimed died of blood-poisoning induced from leaving a sponge in the abdominal cavity during an operation performed by the defendant. This case was unfortunately at the time given prominent newspaper notoriety. Dr. Baldwin, while admitting that a sponge was overlooked, claimed that it was one of the nurse's sole duties to keep count of the sponges, and that when asked whether all the sponges had been removed she had replied in the affirmative. It seems that back of all this, as has been published throughout the country, is the animosity of the people of the Ohio University against Dr. Baldwin, because he had endeavored to unite that institution to the Ohio State University. For this he was compelled to resign his chancellorship in the Ohio Medical University. As a result of the controversy over Mrs. Taylor's death, he has had also to resign the chair of gynecology. To complicate matters still more the operation was performed at the Protestant Hospital, which is connected with the Ohio State University.

Philadelphia.

AT THE meeting of the Contemporary Club, December 12, Dr. Charles W. Dulles gave the address on medicine.

THE RESIDENT and ex-resident physicians of the Philadelphia Hospital held their annual dinner recently. The toastmaster for the evening was Dr. J. B. Walker.

THE CLOSING of two public schools, for fumigation on account of the large number of cases of diphtheria, has been ordered by the Bureau of Health.

THE BOARD of Directors of the National Export Exposition, just concluded in this city, recently paid a just tribute to the memory of Dr. William Pepper, whose foresight in part made the exposition a reality.

DRS. JOSEPH P. TUNIS and R. S. T. Mitcheson, who have for a long time been assistant demonstrators of anatomy in the University of Pennsylvania, have resigned. Their successors have not yet been chosen.

REV. RUSSELL CONWELL has announced that $5000, asked for from the last legislature for the support of the Samaritan Hospital and not allowed, has been procured by members of Grace Church and friends of the hospital.

MEMBERS of the Philadelphia Board of Health, by a recent order, stated that all vessels from Santos, Brazil, must be held

in quarantine at Mareus Hook. This measure has been deemed expedient in view of the existence of the plague at Santos. The principal product now being watched is coffee, which is imported in bags.

AN ORDINANCE has been passed authorizing the mayor to accept, on behalf of the city mission chapel, property occupied by the Municipal Hospital, Twenty-second and Huntingdon Streets. The donor was Dr. George Woodward. The property was given with the stipulation that it should be used for hospital purposes, and if not it was to revert to himself or his heirs.

THE PRESBYTERIAN Hospital has just opened the Thomas Hoge Ward for patients. It was completed last year, but owing to the large number of soldiers treated before its entire completion, its dedication was postponed until this time. The new addition will be devoted to neurologic cases, and be in charge of Drs. S. Weir Mitchell, John K. Mitchell and Guy Hinsdale.

HOME FOR CRIPPLED CHILDREN.

Mr. P. A. B. Widener, a citizen of this city, has announced his intention of giving the city $2,000,000, for the establishment of a home for crippled children. The home will also include a hospital, will be open to all without distinction in creed, color, sex or nationality. It will be located at Logan and, when completed, be known as the Widener Industrial Home for Crippled Children. A tract of land covering 36 acres is being bargained for, on which to erect the buildings.

CHILDREN'S HOSPITAL.

The effort of the public-spirited citizens of Germantown to establish a children's hospital has so far practically failed. After having tried diligently by means of donation boxes, entertainments and subscriptions, $1,022.65 has been secured, and while the expense of advertising and other measures has been quite heavy, there stills remains on hand $354.24. It has been suggested that this sum be donated to the children's ward of the Germantown Hospital, and that the matter of erecting a new hospital be dropped.

New York City.

A YOUNG Armenian woman has arrived in New York, and avowed her intention to study medicine. She has been a pupil in her native land, of one of the American missionaries.

A NEW German hospital has been formally opened in that part of Brooklyn Borough formerly known as Williamsburgh. At the opening ceremony a check for $1,000 was received from an unknown contributor. The financial outlook of the hospital is most satisfactory, there being a surplus on hand sufficient to meet the expenses for the next two years.

HARLEM HOSPITAL.

Earnest efforts are being made to have the present Harlem Hospital, located in East 120th Street, enlarged, or replaced with a building more in accord with the needs of the locality. While it has only thirty-nine beds, more demands were made on this hospital during the past year than on any other in the city, except Bellevue. Besides this it is claimed that the building is overrun with vermin, and in a badly dilapidated condition.

WIRE SWALLOWED IN BREAD.

At the autopsy of a woman 48 years of age, at St. Peter's Hospital, Brooklyn, where she had been under treatment for ten days, her case proving a very puzzling one, it was found that death was due to a puncture of the lungs by a short piece of fine wire. The wire appears to have been imbedded in a large piece of bread which she accidentally swallowed, and an X-ray examination after her admission to the hospital gave no results.

CONSOLIDATION OF CHARITY SOCIETIES.

Under the advocacy of John P. Faure, much interest has been awakened in charitable circles in the proposal to consolidate the two thousand charitable societies of the city into one gigantic trust. So far the plan has not taken definite shape, but it is likely that the idea is to follow the system in use in Liverpool, where all the moneys for charitable purposes are collected through one organization, thus effecting an enormous saving. Among those who indorse the scheme most enthusiastically is Theodore Sutro, president of the Medical and Legal Relief Society.

CONDITION OF THE POOR.

The fifty-sixth annual report of the Association for Improving the Condition of the Poor, just issued, shows that the fresh air work of the Association during the past summer was more extensive than ever before: 15,317 persons were taken on the day excursions, of which there are five each week, while 1490 women and children were kept at the association's summer home on Coney Island, for an average stay of ten days each. The People's Baths, where baths of various kinds are furnished at a nominal rate, show a credit balance in their operating expenses since they were opened. The number of baths taken was 120,347, an increase of 5000 over the previous year.

"CURE" FOR CONSUMPTION.

Crotte's electric cure for pulmonary tuberculosis is now under trial in St. Luke's Hospital, and the results are being critically watched by the medical staff of the hospital. The management deprecated the fact that the public had learned of these experiments, as they had been undertaken in private with a view to determining the scientific value of the treatment without awakening false hopes in the hearts of the many unfortunate victims of this disease. Crotte claims that three-fourths of the early cases can be cured, and probably 30 per cent. of those somewhat more advanced at the time of coming under the treatment. [Our correspondent does not state whether the medical staff of St. Luke's knows about the method adopted by Crotte, to have his schemes endorsed by the AMERICAN MEDICAL ASSOCIATION at Columbus, and the failure of his endeavor to "work" the people of the West since then.—ED.]

REPORT OF HEALTH DEPARTMENT.

The report of the Health Department for the quarter ending June 30 has just been received by the mayor. The estimated population of the city at that time was: Manhattan Borough, 1,953,569; the Bronx, 163,537; Brooklyn, 1,231,543; Queens, 134,139; Richmond, 67,260; total, 3,550,053. The death-rate for the three months was 18.16 per 1000; the marriage-rate, 9.12, and the birth-rate, 20.07. The lowest death-rate occurred in the Borough of Richmond, being only 15.17, while in Manhattan it was 17.45. Of the 16,119 deaths reported, more than one-half occurred in the tenements, and only one-fourth represented those in dwellings, in the streets or hotels, or by accident. There were 160 suicides during this period, 44 of whom used carbolic acid to end their lives. The Board vaccinated 38,555 persons, disinfected 16,571 rooms and removed to hospitals 612 persons suffering from contagious diseases.

Correspondence.

Canada.

(From Our Regular Correspondent.)

TORONTO, Dec. 9, 1899.

THE ANNUAL MEDICAL DINNERS IN TORONTO.

The students of the Toronto School of Medicine held their thirteenth annual banquet, December 7. Dr. Roddick, Montreal, was the guest of the evening, and a goodly portion of his address was taken up with the discussion of Dominion registration. Trinity Medical College held its twenty-second annual banquet on the following evening.

ADULTERATION OF FOODSTUFFS.

From reports of deaths occurring as the direct result of the consumption of canned or tinned goods, the Department of Inland Revenue, Ottawa, has deemed it advisable to issue a circular letter to the entire profession of medicine in the Dominion of Canada with a schedule of questions to be answered in regard to illness or deaths from such causes. The consumption of these goods is largely on the increase, and the Dominion authorities deem it essentially necessary to safeguard the health of consumers. The questions to be answered are as follows: 1. Have any cases of illness, apparently attributable to the use of tinned foods, come under your notice within recent years? 2. Please state the number of such cases and the period of your observation. 3. How many have terminated fatally? 4. Have you judged the symptoms to point to metallic or to ptomain poisoning? 5. If the latter, was the defect owing to the imperfect sealing of the tins or to slight change or decomposition of the contents on account of age? 6. Have you

any suggestions to make with a view to bettering existing conditions as regards tinned foodstuffs?

MAJOR-GENERAL HUTTON AMONG THE MEDS.

The Commander of the Canadian Militia accompanied by Surgeon-General Neilson recently visited Toronto and addressed a mass meeting of the medical students of Trinity and Toronto schools of medicine and their respective staffs, on the establishment of bearer companies and field-hospitals among the students at the respective medical colleges of the Dominion. Heretofore this branch of militia has not been organized, and it was for that purpose that he took occasion to visit them and secure their co-operation in the scheme. Surgeon-General Neilson explained bearer companies and field-hospitals. He spoke of the whole organization as a military medical council with seventy-two officers. From that body the officers would be selected for the field-hospitals and bearer companies. In times of war a bearer company would consist of ninety-two officers and men and forty-five horses. Their duty would be to carry the wounded off the field of battle. The field-hospitals would consist of forty-five officers and men who looked after the wounded. The former would render first aid on the battlefield; the latter, attend to their wounds on proper surgical lines. The organization was commenced. The General has already formed one each of these among the students of McGill.

DOCTORS, DRUGGISTS AND DEPARTMENTALS.

The *Canadian Druggist* is advocating the departmental plan of doing business in drug stores. After long years of bitter and consistent opposition to departmental stores, it is somewhat staggering to have this suggestion emanating from such a source. Time was when no word was sufficiently condemnatory of doctors who participated in the illicit connection with the drug departments of these establishments, to the extent of sending them now and again a few prescriptions. That was after they saw the trade in sundries, patents, and quack remedies gradually slipping away from them. Now throwing all consistency to the winds, druggists are advised to embark in the fitting of eye-glasses and thus add to their stock in trade, a valuable and profitable "side line" or department, first qualifying themselves at some good "institute" and obtaining the degree of "doctor of refraction." It is stated, on the authority of the above-named journal, that this is already a profitable "department" in some drug stores, and that more money can be made by a successfully managed "department" of this kind than from the drug store proper. Of course, they seem to be blind to the fact that this is another "pound of flesh" gouged from the physician—the eye specialist; but the past relations of the doctors and druggists in the matter of "counter prescribing," "substitution," and other overt and yellow acts are old scores, to which this new infringement will have to be added.

RED CROSS WORK.

The Governor-General recently spoke, at a gathering in Ottawa, of the splendid work accomplished by the great organization the world over, since its inception at Geneva in 1864. He thought that those who were interesting themselves in this important work in connection with the dispatch of the Canadian contingent to South Africa, could not do better than follow out the suggestions of Dr. Ryerson, the secretary of the organization in Canada with offices in Toronto, to the effect that it would be far more satisfactory to inaugurate a Canadian branch of the Red Cross Society, contributing to the central board in England, than for Canada to undertake to independently administer the affairs of such a society. If they were to affiliate with the British central committee in this way, the funds derived from Canada would no doubt be laid out by experience gained through many former wars. Dr. Ryerson thought that it was desirable to have united action in the matter and proposed that subcommittees should be formed in the large towns, to be called Red Cross committees, whose duty it would be to consult from time to time with the central office in Toronto, as to supplies and expenditure. Following on this suggestion, an Ottawa and eastern committee was formed; and the result of the meeting will be an impetus in the prosecution of this work in the Dominion. His Excellency further detailed a historic account of the past work of the organization, reciting many instances of his own personal connection with the order, and what he had seen it accomplish in the time of war. He spoke also of the centralization of the different relief funds for the wives and families of the members of the contingent at the front. A committee was organized for the purpose of collecting funds for the organization.

HOSPITAL ABUSE IN TORONTO.

The medical health officer, Dr. Sheard, having been ordered by the local board of health to inquire into and report on the abuse of medical charity in the general hospitals of this city, has made an exhaustive report on the whole subject. Exclusive of $16,000 for the Isolation Hospital, $3000 more than ordinary on account of the smallpox outbreak in the early part of the year, the total amount expended by the city on the four general hospitals in 1898 was $34,816.50. The report does not include a lump sum of $7500 donated to the Victoria Hospital for Sick Children. The total amount expended by the city on all the hospitals for these charity patients for the years 1894 to 1898 was as follows: in 1894, $24,714.75; 1895, $28,163.30; 1896, $32,858.75; 1897, $36,428.60; 1898, $24,816.50; 1899, to September 30, $26,969.50. Totals arranged as to institutions, from 1894 to 1899 (9 months) inclusive: Toronto General Hospital, $103,809.60; St. Michael's, $43,164.40; Grace, $25,241.40; St. John's, $3,270.00; Convalescent Home, $5,875.40; Western, $2,686.20. During these years there were admitted to these hospitals, charity patients as follows: General in 1895, 1343; 1896, 1342; 1897, 1271; 1898, 1157; 1899 (9 months), 926; St. Michael's, 1895, allowance cut off by order of the council; 1896, 637; 1897, 684; 1898, 761; 1899 (9 months), 588; Grace, 1895, 301 (then homeopathic); 1896, 288; 1897, 328; 1898, 285; 1899 (9 months), 265. Grace was this year converted into a regular general hospital. Western 1897, 60; 1898, 43; 1899 (9 months), 40. The average cost per patient at the General in 1895 was $14.48; 1896, $13.91; 1897, $15.60; 1898, $14.49; 1899 (9 months), $13.54; St. Michael's, 1896, $13.41; 1897, $12.92; 1898, $14.97; 1899 (9 months), $15.00; Grace, 1895, $14.40; 1896, $13.92; 1897, $16.24; 1898, $15.14; 1899 (9 months), $13.49; Western, 1897, $14.24; 1898, $22.91; 1899 (9 months), $21.22. The great disparity between the average cost per patient at the Toronto General Hospital and the Western Hospital, Dr. Sheard states to be due either to the fact that the Western did not cure its patients as soon as the General, or else they kept them after they were well. That the inquiry is already bearing fruit is seen from the fact that the relief officer has investigated 101 applications since the inquiry was ordered, about a month ago; and out of these it was found that 16 were able to pay or else had not resided any length of time in the city, sufficient to entitle them to the city's charity. This had affected a considerable saving even in that short time, and the work was recommended to be continued. It is altogether likely that the whole subject will be brought up in council immediately after the municipal elections in January.

London.

(From Our Regular Correspondent.)

LONDON, Nov 24, 1899.

TRANSVAAL SERVICE AND SUPPLIES.

The only alleged scandal hitherto hatched in connection with the war preparations here, that of the reappearance among English supplies of some unfit American canned beef, is being thoroughly investigated, but seems to be little more than mere rumor as yet. It is certain that some tinned meat provided for the troops upon the troop-ship *Arawa* was found unfit for use and had to be thrown overboard, but what was the source of the meat-supply or the cause of its condition is yet *in nubibus*. The report that it was some of the very canned beef which attained such notoriety during America's Cuban campaign does not appear to be supported. In every other respect Sir William MacCormac, Mr. Makins, and Mr. Treves report themselves delighted with the perfection of both the commissariat and medical arrangements.

It is an interesting illustration of the somehow inherent inefficiency of officialdom, in matters connected with the health of the troops, that while a number of the larger transports, which were taken from the great shipping companies, provisioned themselves and supplied the soldiers with ordinary third-class passenger fare, not a single complaint has come as

to the quality or quantity of the food supplied on these private vessels, while on the vessels directly provisioned by the Admiralty there has been considerable grumbling, and at least one instance of alleged unfitness of the food.

The most interesting event of the week in the military medical preparations has been the completion of the hospital ship, the *Princess of Wales*, fitted up by the royal lady whose name she bears, at an expense of something like $50,000. The ship itself was generously supplied by the Albion Steamship Company of Newcastle-on-Tyne, which also provided and pays the wages of the entire ship's company. It is one of the most perfectly equipped vessels which has yet been sent out, being warmed by steam, cooled by electric fans and with an ice machine with a capacity of half a ton of ice per day.

The largest single donation yet received for the care of the sick and wounded in the Transvaal was made this week in the generous gift of the Duke of Portland, of $50,000, to the English Red Cross Society.

The Irish Transvaal Society is adding its usual comic touch to the medical situation by clamorously demanding funds to enable it to send out an ambulance in the Boer service. The majority of the journals rather regard this as an attempt to assist the Boer cause under the cloak of medical humanity, after their loud clamor for actual volunteers to aggressively assist the burghers has met with so little response.

The officers of the ambulance equipped and sent out by Sir James Sivewright, although consisting largely of medical men of Dutch extraction, from Cape Colony and Natal, nobly announce their intention to assist the wounded of both sides equally, though probably the Boer wounded, needing more attention from the imperfect state of their ambulance service, will receive the greater share.

ROYAL COLLEGE OF SURGEONS.

The almost farcical annual meeting of the Members and Fellows of the Royal College of Surgeons was held this week, and as was expected, resolutions were passed severely criticising the council, for declining to ask for powers to extend the franchise to members, in the new charter. As only about forty of the more than 10,000 members cared to be present we fear that the attitude of the council will not be much influenced by this vote.

OPEN-AIR TREATMENT OF CONSUMPTION.

The splendid promise of the open-air treatment of consumption seems to be taking almost as firm a hold on the imagination of the English profession as on that of the public, as the crowded attendance at the formal discussion on this subject at the late meeting of the Medico-Chirurgical Society attested. Members were present from almost all over the kingdom, and so great was the interest of the discussion that it has announced that two more evenings will be devoted to the subject.

PRESERVATIVES OF FOODS.

The daily press is directing a certain amount of half humorous, and not wholly undeserved, criticism against the attitude of some of the medical witnesses before the Commission on the Use of Preservatives in Foods, which is now in session. It alleges that it seems impossible to arouse much excitement in the medical mind of the day, over any alleged intoxication, in which no microbe is to be discovered or even suspected, and complains of the cautiously worded and rather indefinite replies of the witnesses as to the probable effect of such preservatives as boric and benzoic acids, and even formalin, on the human system. They are exulting greatly over having finally got some positive evidence on this head, in the production of a body of a kitten, whose death had resulted from feeding on highly borated milk for a period of six weeks. This is alleged to be the only piece of positive evidence yet presented by our profession as to the actual injuriousness of these substances. It seems hard to bring home to the lay mind that the really important question about these mild food-preservatives is not as much their direct toxic effect as whether their use will cover up injurious fermentation and putrefaction changes in the foods themselves, especially in the case of milk, or allow uncleanly methods of preparing and handling to escape detection.

DOUBLY RELATED TO THE PROFESSION.

Miss Chadwick, the sister superintendent of the *Princess of Wales*, hospital-ship, is doubly related to the profession, in that she is the niece of Mr. W. K. Treves, F. R. C. S., at Brighton, elder brother of the well-known surgeon.

A Pathologic Department.

To the Editor:—I was pleased to read in the JOURNAL of December 2, a communication from Dr. Frank B. Wynn, on the above topic. I wish to heartily indorse the suggestions of Dr. Wynn, and urge that immediate steps be taken to consummate the plans for a national pathologic department. Based on the propositions laid down by the Doctor it will prove a success.

As a member of the Indiana State Medical Society, I can add my testimony to the value of the exhibit as shown at our annual meetings. It has grown to be a valuable collection, and is highly prized by our members as a real school of instruction in its special department. Our state society feels proud of this pathologic museum, especially as ours was the first state to move in the matter, and we give the largest amount of the praise to Dr. Wynn, who has been untiring in his efforts to make it a success.

Respectfully,

G. W. H. KEMPER, M.D.

MUNCIE, IND., Dec. 4, 1899.

To the Editor:—I have read with pleasure the letter of Dr. Frank B. Wynn of Indianapolis, Ind., in the JOURNAL of December 2, and take this opportunity of not only indorsing his idea of starting a section on pathology for the ASSOCIATION, but I also want to say that I am positive that it will meet with universal support from the physicians of this section, and I trust the subject will be considered by the officers of the ASSOCIATION, and favorable action taken at once. An exhibit of this character would undoubtedly draw large crowds to our annual meeting, and there could be no question that it would be one of the most instructive and interesting features that we could have to look forward to from year to year. The exhibit at Columbus, by the Indiana State Medical Society, last June, was to me in many respects the most interesting and instructive of any of the departments in connection with the meeting, and I am sure that it would prove equally so each year. The suggestion as made by Dr. Wynn should receive favorable consideration, inasmuch as he has demonstrated both in his letter and by practical experience, that the move can be made a success.

Respectfully, M. P. GOFF, M.D.

CLARKSBURG, W. VA., Dec. 1, 1899.

To the Editor:—In the December 2 issue of the JOURNAL I note with pleasure a letter from Dr. Frank B. Wynn recommending the inauguration of pathologic exhibits at the meetings of the AMERICAN MEDICAL ASSOCIATION, and I earnestly hope that the Executive Committee of the ASSOCIATION will favorably consider the suggestions contained therein. I feel sure that all who had the pleasure of examining the pathologic exhibit of the Indiana State Medical Society at Columbus, Ohio, will indorse and recognize this unique innovation in society work as a feature of great interest and practical benefit, and it would seem unnatural if other states did not soon follow the excellent example. If the favorable editorial mention that this movement has received generally is at all significant, the establishing of a department of pathology in the National ASSOCIATION must appeal to all those interested in the promotion of scientific medicine. If established along such a plan as suggested by Dr. Wynn, it would soon constitute a departure in ASSOCIATION work that would not only serve as a constant source of pride to the ASSOCIATION, but to its members—certainly be one of the most salient points of interest connected with the annual meetings of the ASSOCIATION.

Respectfully, WALTER L. BIERRING, M.D.

Professor of Pathology and Bacteriology, State University of Iowa.

IOWA CITY, IOWA, Dec. 8, 1898.

Credit to Dr. Marlow.

DENVER, COLO., Dec. 7, 1899.

To the Editor:—In "Sajous Annual and Analytical Cyclopædia of Practical Medicine," volume iv, occurs an error to which I would like to call attention. By mistake my name is appended to the article on "Diseases of the Lens," but the writer of this excellent paper, I am informed, was Dr. Frank W. Marlow, Syracuse, N. Y., and to him the credit for it is due.

EDWARD JACKSON, M.D.

Book Notices.

MEDICAL DIRECTORY OF NEW YORK, NEW JERSEY AND CONNECTICUT. Edited by E. Eliot Harris, M.D., New York. Vol. I. Small Octavo. Cloth, pp. 882. Price, $2. New York: Trow Directory Printing and Bookbinding Co. 1899.

This directory, issued by authority of the N. Y. State Medical Association, and the N. Y. and Kings County Medical associations, is an illustration of what physicians can do for themselves, rather than leave it to those outside the profession. There is no reason why every state society, alone or in combination with the neighboring state societies, should not issue such a directory, and keep it under control so that its value to physicians themselves would be greater. Further, if it can be done so well by three states contributing, why not all states combine and get out a national directory, say every three years, admitting none to its pages who are not reputable. Such a directory would be a valuable one in many ways.

The book before us gives the names of physicians arranged according to towns, also alphabetically; the names of the members of the boards of health, charity organizations, etc.; the law governing the practice of medicine in the three states; the constitution and by-laws of the important medical societies, together with the constitution, by-laws and Code of Ethics of the AMERICAN MEDICAL ASSOCIATION. Much other information of value to physicians is also given. No advertising inserts mar the pages, the advertisements being placed at the end of the book, and these are only of the most ethical kind. None but regular physicians are admitted to the directory. The book as a whole is deserving of the highest praise, and such a publication should be encouraged.

NOTES ON MODERN TREATMENT OF FRACTURE. By John B. Roberts, A.M., M.D., Professor of Surgery in the Philadelphia Polyclinic. Illustrated. New York: D. Appleton & Co. 1899.

This little work, according to the author's prefatory statement, is a reproduction of the essays expressing his views, announced at various times, in regard to certain points as to the management of fractures. The essays are only altered in places to bring them into accord with his latest light on the subject. No indication is given as to the original publications, but some of them will doubtless be recognized by the readers of the JOURNAL. The subjects considered include discussions on the necessity or propriety of exploratory incisions in closed fractures, the use of steel nails through the skin in fractures liable to displacement, the prevention of deformity, the common errors of treatment, refractures, injuries to the cranium, tenotomy, fractures of the forearm, etc. Dr. Roberts is a man of opinions and an unhesitating critic, and his book is therefore the more interesting and should be instructive, even if there should be some slight disagreements with the author's views. He certainly has the faculty of expressing his views clearly and fearlessly and his book is therefore the more likely to be accepted as a useful contribution to the literature of the subject.

MATERIA MEDICA, THERAPEUTICS, MEDICAL PHARMACY, PRESCRIPTION-WRITING, AND MEDICAL LATIN. A Manual for Students and Practitioners. By William Schleif, Ph.G., M.D., Instructor in Pharmacy in the University of Pennsylvania. Philadelphia and New York: Lea Brothers & Co.

This work forms the treatise on materia medica in Lea's Series of Pocket Text-Books, and covers the ground fairly well within the compass allowed. Many of the minor therapeutic agents are noticed, though many are necessarily omitted. A valuable addition is the section on foods, at the close of the work. It also gives an extended dose list and table of poisons and their antidotes, and of incompatibles, also a classification of drugs according to their action, all of which add to the value as a handy reference work.

CLINICAL LECTURES ON NEURASTHENIA. By Thomas D. Savill, M.D., Physician to the West-End Hospital for Diseases of the Nervous System, London. London and New York: William Wood & Co. 1899.

This volume includes lectures by the author, given in a post-graduate course, and some of them have already appeared in the London *Clinical Journal*. The book is pleasant and easy reading, and gives a very fair idea of many of the protean conditions that fall under the general head of neurasthenia. The author makes a special point of the existence of a special form of neurasthenic insanity, which he holds to be very generally curable and not adapted to asylum treatment, which in some cases may be disastrous. The disease is not so new or unrecognized as he seems to think, and there may be some difference of opinion as regards the necessity of sequestration, but the descriptions are very fair and the treatment of the subject generally interesting. The work concludes with a chapter on the history of neurasthenia, by Agnes Blackadder, M.B., and a bibliography.

KIRKE'S HANDBOOK OF PHYSIOLOGY. By W. Morrant Baker, F.R.C.S., and Vincent Dormer Harris, M.D., Lond., F.R.C.P. Fifteenth American Edition. Revised by Warren Coleman, M. D., and Charles L. Dana, A.M., M.D. Illustrated. New York: William Wood & Co. 1899.

This, the fifteenth American edition of Kirke's Physiology, hardly seems to need an introduction to our readers. The changes that have been made are merely in shifting the position of some of the chapters and additions in the descriptions of the cell, the coagulation of the blood, the ductless glands and muscular nerve physiology. The section on the nervous system, by Professor Dana, has not been materially changed, if at all, but gives a very full, up-to-date view of the very important subject of the nerve physiology. The editors have done their work well in the changes made, and the work will, beyond question, retain its position as one of the most popular text-books on its subject.

PRACTICAL ANATOMY, Including a Special Section on the Fundamental Principles of Anatomy. Edited by W. T. Eckley, M.D., and Mrs. Corinne Buford Eckley. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1899.

The author, in his preface announces that he submits this "little book" as a dissecting-room guide to Morris' Human Anatomy. This modest introduction hardly does it justice, for it is not a "little book" in the ordinary physical sense of the term, and as a dissecting-room guide we should consider it quite satisfactory and thorough. The illustrations are numerous and generally good, and the schematic ones are likely to be especially useful. Many of the illustrations are colored, thus adding to their attractiveness and value. For the purpose intended, we can heartily recommend the volume.

MINOR SURGERY AND BANDAGING, Including the Treatment of Fractures and Dislocations, the Ligation of Arteries, Amputations, Excisions and Resections, Intestinal Anastomosis, Operations upon Nerves and Tendons, Tracheotomy, Intubation of the Larynx, etc. By Henry R. Wharton, M.D., Demonstrator of Surgery in the University of Pennsylvania. Fourth Edition. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1899.

The appearance of this, the fourth edition of Wharton's Minor Surgery, is evidence of the favor with which the book has been received since its first appearance in 1891. The author has added a section on amputations, ligations, etc., thus materially enlarging the book and adding to its usefulness as a ready reference work on practical surgery when the larger and fuller works are not available.

PHYSIOLOGY. A Manual for Students and Practitioners. By Howard D. Collins, M.D., and Wm. H. Rockwell, Jr., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

This work, which forms one of the series of Lea's Pocket Text-Books, as stated by the author, makes no claims to special originality, but aims simply to serve as an introduction to the larger works on the subject, and also to be something a little more elaborate and to furnish fuller and more accurate information than the various popular quiz compends. Claiming no more than this, one can not see that it does not fully meet all its pretensions.

INTRODUCTION TO DERMATOLOGY. By Norman Walker, M.D., Fellow of the Royal College of Surgeons of Edinburgh. Illustrated. New York: William Wood & Company. 1899.

The title of this work is especially remarked on and attention called to it by the author in his preface. The work

does not claim to be a complete system of skin diseases, but apparently gives very satisfactory descriptions of the more common forms, while omitting some of those rare conditions that are liable to be met with only by, and are of interest to, the specialist. The work is very fully illustrated, largely with colored plates, and some of these, if not all, appear very satisfactory. The uncolored illustrations are in our opinion as valuable as the others. The work makes a very favorable impression.

LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By Elbert W. Rockwood, B.S., M.D., Professor of Chemistry and Toxicology in the University of Iowa. Illustrated. Philadelphia, New York and Chicago: The F. A. Davis Company. 1899.

This is a very handy volume which ought to be useful and popular. So far as we are able to see, the subject is well presented and its statements are full and clear, meeting all the needs of a laboratory manual.

Deaths and Obituaries.

FRANCIS C. PLUNKETT, M.D., died suddenly, November 29, in Lowell, Mass. He was born in Casthemore House, Ireland, March 13, 1842, attended the seminary of Achoury, at Ballaghdereen, and was matriculated later at the Royal College of Surgeons. He had a large experience in dispensary work in his native country before he came to America, in 1863, when he graduated in medicine. Almost immediately after his arrival here, he entered the army and was appointed assistant-surgeon to the 183d Ohio Volunteers. At the close of the Civil War, he was assigned to duty to the Bery-House Hospital, Wilmington, N.C., and from there was transferred to the Invalid Corps at Washington, D.C. Early in 1866, Dr. Plunkett went to Lowell, where he has been in practice since. He was one of the founders of St. John's Hospital, on the medical staff of which he served thirty-three years, being president several years. He was consulting physician to the Board of Health in 1871. He had been an alderman, a city commissioner, a member of the advisory board of the City Hospital, a member of the General Butler Post, G. A. R., and was a companion of the first class of the Loyal Legion. He maintained an active connection with the Massachusetts Medical Society, and was president of the northern district in 1887. With the death of Dr. Plunkett there passes out of view one of the most remarkable physicians ever known in Massachusetts. Though not known as a writer, on account of the demands of an enormous practice, he was a man of deep culture and versatile accomplishments.

ADELINE MARTINE REA, M.D., Woman's Medical College, Pa., 1893, died in York, Pa., November 23, of tuberculosis, aged 27 years.

WILLIAM AUGUSTUS LOCKWOOD, M.D., College of Physicians and Surgeons, N.Y., 1865, was discovered dead in his office chair, in Brooklyn, N.Y., the morning of December 8.

STUART B. CARLISLE, M.D., Bellevue Medical College, N.Y., 1881, of Mount Vernon, N.Y., died from cardiac disease, in the Harlem Hospital, New York City, December 8. An hour before his death he was found ill in the street, by a policeman.

SAMUEL TREAT ARMSTRONG, M.D., St. Louis Medical College, 1879, died in Manila, Philippine Islands, December 4, from leukemia. He was a native of Ohio and appointed from New York, a brigade surgeon, U. S. Volunteers, June 4, 1898. At the time of death he was surgeon of the Thirty-second Infantry, U. S. A.

DEATHS ABROAD.

William Allan Ira Case, M.D., the oldest citizen in the city of Hamilton, Ont., died on the 2d inst., at the age of 95 years. He was born in that city and made it his home all his life, and had practiced medicine for more than half a century.

Dr. Aubry, of Saint-Brieux, known outside his immediate circle by numerous works on the contagion of murder, influence of the press on criminality and other forensic subjects, is dead; also Dr. Carlos Valdes, a prominent physician, writer and legislator in France, born in Santiago, Cuba. F. V. Birch-Hirschfeld, professor of general pathology at Leipsic, died recently.

Miscellany.

Not Vaccin Virus.—The preparation known as anthrax vaccin or blackleg vaccin, for preventing disease in cattle known as anthrax or blackleg, the United States General Appraisers at New York hold, is not vaccin virus, and, therefore not entitled to free entry under paragraph 692, act of 1897.

Recording Telephone.—Young Professor Dussaud of Geneva, Switzerland, who has invented a phonograph for the deaf, a kinematograph for the blind, etc., has now constructed a recording telephone which, in combination with a phonograph, automatically records the message received over the wire. The message is delivered later through the phonograph. We note as a curiosity, by the way, the recent study of the voice and music, reversing the action of the phonograph, and of motion by reversing the kinematograph.

Indications and Technic of Thyrotomy.—Sir F. Semon, Schmiegelow and Goris have been commissioned to report at the International Congress of Medicine on this subject, and Goris appeals to surgeons everywhere, who have performed this operation to assist him with their experience in getting up statistics of the immediate and ultimate results, to establish the indications for thyrotomy, especially in respect to benign or malignant tumors and laryngeal tuberculosis. He begs to know the age and sex of the patients, nature of the affection and its exact localization, the general condition, details of the thyrotomy, with or without tracheotomy and the immediate and remote results, with a few observations. Address Dr. Goris, 175 rue Royale, Brusssels, Belgium.

"Cure" for Drunkenness.—A Jersey City, N. J., druggist claims to have discovered a new cure for drunkenness, and the *New York Herald* devotes a column in a sensational account of the way in which the cure was discovered. Unlike most great discoveries, this one gives away the formula. Here it is: One pound of fleabane; two quarts of powdered cayenne pepper; one quart of alcohol; three quarts of water. Place the fleabane leaves in the water and alcohol and let them stand two or three weeks; then press out and filter through filter paper. The dose varies from a half ounce to four ounces, given three or four times a day until the patient is under the influence of the drug. The alcohol is certainly in a sufficient quantity to "cure" any ordinary case. We hope our readers will not be too emphatic in their guarantee to cure alcoholism with the remedy.

Ophthalmia Neonatorum and Blindness.—According to the forthcoming report of the New York Institution for the Blind, there has been a continued decrease for the last thirteen years, in the number of blind children received at that institution. The report emphasizes that this gain is due to better sanitary and medical supervision, and says: "When this reform was first undertaken, some twelve years ago, a great many cases of blindness were chargeable to our custodial institutions, where the use by the inmates of the roller-towel and common wash-basins did a great deal to propagate eye troubles of every kind. This mistaken method has been done away with, and the good results of that change, improved by periodical medical inspection, have been most marked."

Inefficacy of Yellow Fever Serum.—Dr. A. Matienzo, of Tampico, who accompanied Dr. Baker to Vera Cruz, to test the yellow fever serum prepared by the N. Y. Board of Health, reports in the official *Boletin del Consejo Superior de Salubridad* of Mexico, that the injections produced hyperemia and acceleration of the pulse, but that they did not arrest the disease nor have the least effect on the appearance, the course or the duration of the symptons of yellow fever. He does not attempt to judge of its action as a preventive, on account of the limited number of cases treated. He adds that the reaction to the injections of toxin in convalescents from yellow fever, is equal or superior to the reaction induced in non-immunized persons, which confirms Sanarelli's assertion that the curative power of the serum is not due the antitoxic substances, and seems to confirm by its analogy with typhus serum, the suggestions of certain bacteriologists that the bacillus icteroides is a bacillus resembling Eberth's bacillus.

Congress on Tuberculosis and Its Modern Treatment.—The Medicolegal Society, New York City, will devote an extraordinary session to "Studies on Tuberculosis, Its Management and Modern Treatment," Feb. 21 and 22, 1900. The leading American scientists and specialists will be asked to contribute papers, and unite in the discussion of the subject. The following questions have been decided on for discussion: 1. Special hospitals and sanitariums, their construction and operation. 2. What are the most successful methods of treatment? 3. Individualization of certain forms of tuberculosis, its importance and necessity. 4. Is change of climate a necessity for successful treatment? 5. Should the use of antitoxins in tuberculosis be condemned from a purely scientific point of view? The profession is desired to co-operate by contributing papers and taking part in the discussion, and to advise either member of the committee as early as possible. Thomas Bassett Keyes, 98 State Street, Chicago; J. Mount Bleyer, 460 Madison Avenue, New York City; Clark Bell, 39 Broadway, New York City.

Regulation of Vivisection.—Senator Gallinger, on the 6th inst., introduced in the Senate the bill prepared by the Washington Humane Society to regulate vivisection in the District of Columbia. It is known as "Senate Bill, No. 34." and its principal provisions, which appear very fairly at first glances, are as follows:

1. A vertebrate animal on which an experiment calculated to give pain is to be performed must be placed wholly under the influence of ether or chloroform; except that in inoculation experiments or tests of drugs the animal need not be anesthetized: nor in surgical experiments need animals be kept anesthetized during recovery.

2. No such experiments may be performed in public schools.

3. All experiments upon living animals may be performed only in registered places and by persons properly licensed.

4. Inspectors are to be appointed by the President of the United States to visit places where experimentation is carried and to make reports directly to him.

5. Reports of the experiments made, the number of animals used, the methods employed and the results obtained shall be made to the Government whenever asked for, from time to time.

A Comment.—Under the term "repeaters," the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION describes what it terms a "reprehensible habit" of some contributors to medical literature of reading the same paper in succession before a large number of societies. To this we would add a large number of writers who send copies of their papers simultaneously to a number of different journals. This habit is not objectionable, providing the papers are accompanied by the statement that they have been furnished to other journals, and there is an understanding that they are, or may be, published elsewhere. At the last meeting of the Mississippi Valley Medical Association a paper was read which has already appeared in five journals—in all of them under the heading: "Original Communications."—*Med. Review*, St. Louis, Mo., December 2.

Queries and Minor Notes.

INFORMATION WANTED: ANSWER.

ROGERS PARK, CHICAGO, Nov. 25, 1899.

To the Editor:—In reply to a query of H. S. W. (see JOURNAL, November 25, p. 1276), I would suggest the following as being likely to be of value to the inquirer: 1. *Journal of Applied Microscopy*, Rochester, N. Y., $1 a year. 2. *Journal of Pathology and Bacteriology*, etc., published by Young J. Pentland, Edinburgh and London, at £1. 1s. 3. Possibly the *Journal of the Royal Microscopical Society* (through a Fellowship), London. 4. "Transactions of the American Microscopical Society" (as a member or buying) $3 a year.

Yours truly,

X.

The Public Service.

BRITISH ARMY MEDICAL ORGANIZATION IN SOUTH AFRICA.

A medical officer of high rank has recently given to the London press an outline of the medical arrangements for the care of the sick and wounded of the army corps now operating against the Boers in South Africa. The following abstract of his paper will no doubt be of interest to many readers who have "seen service" on this side of the Atlantic.

FIRST AID ON THE FIELD.

A British army corps consists of upward of 36,000 officers and men, of whom 34,000 are fighting men, while the others are connected with the subsistence, quartermaster's, signal and other staff corps. It consists of twenty-five battalions of infantry, each in round numbers 1,000 strong, with cavalry and artillery varying according to the requirements of the business in hand. In South Africa there is or will be seven regiments of cavalry, four batteries of horse artillery, fifteen batteries of field artillery, in all about 84 guns, and four companies of engineers with pontoon trains. These units are organized into brigades and divisions. A cavalry brigade consists of three regiments and a battery of horse artillery, and an infantry brigade consists of four battalions. Each division comprises two brigades, and the infantry division has attached to it three field batteries and a company of engineers. The units not accounted for are called "corps troops." Each regiment, battalion, artillery division and company of engineers has attached to it a medical officer, who accompanies it into action with his orderly to give first aid to the wounded, while the regimental stretcher-bearers are ready to carry the first cases to the dressing-stations or field-hospitals. There are thus about forty-five surgeons on the field with the army corps.

BEARER COMPANIES.

To each brigade is attached one company consisting of 3 officers, 1 sergeant-major, 12 sergeants and corporals, 1 bugler and 44 privates of the R. A. M. C.—the Royal Army Medical Corps—with 38 men of the army service corps for transport duties. These bring the wounded to a collecting station where the ambulances of the "first line" are ready to carry them to the dressing station. This is organized at some building out of the line of fire, or if no building is available the operating tent is pitched. The major of the bearer company, with one other medical officer, four non-commissioned officers and four privates, one of whom is a cook, are on duty here to examine and dress wounds, administer medical comforts, and place the wounded in ambulances to be carried to the field-hospital.

FIELD-HOSPITALS.

There are twelve of these attached to the corps, each equipped for 100 beds, but so organized that sections of 25 beds can be unpacked and used separately. The personnel of each is 4 medical officers, 1 quartermaster, 1 sergeant-major, 11 sergeants and corporals and 23 privates of the R. A. M. C. with a sergeant and 19 privates of the army service corps. As these hospitals have to march with the troops, the wounded are sent as soon as possible to a post on the "lines of communication."

STATIONARY HOSPITALS.

For those unable to bear the fatigue of a long journey to the base of supplies, there will be resting-places or "stationary hospitals" along the line of rail. Each of these is equipped for 100 patients in two sections of 50 beds each. Four of these hospitals have been sent to South Africa. The personnel is similar to that of the field hospital, but without the army service men. Buildings are used when available, otherwise tents to form a camp may be forwarded from the base.

BASE HOSPITALS.

Each general hospital at the base has accommodations for 20 officers and 500 enlisted men. Four of these were mobilized with the army corps now in Africa and one is organized at Wynberg, near Cape Town. Suitable buildings are selected. The staff of each consists of a colonel and 7 officers, including a quartermaster, with 11 civilian surgeons, a woman superintendent and 8 nursing sisters, 2 warrant officers, 26 sergeants and corporals and 115 privates of the R. A. M. C.

DEPOT OF STORES.

These, for the supply of medicines, dressings and medical comforts, such as wine, spirits, beef essences, etc., are established at the base; and "advanced depots" are thrown forward to positions where the field-hospitals and bearer companies can draw on them.

HOSPITAL TRAINS.

The simplest form is obtained by stringing army stretchers by ropes from the roof of a baggage car. An improvement has been made by having Aldershot pattern frames to fit into the cars; several of these have been sent out to Africa. Two systematically equipped trains have been fitted out by the local authorities in Natal, with wards, stores, kitchen, dispensary and quarters for the medical staff. A special hospital train, "The Princess Christian's train," is now nearing completion in Birmingham, to be sent out as soon as possible. Sir John Furley has supervised its construction.

HOSPITAL SHIPS.

Only light-draft vessels can cross the bar at Durban. Two such, the *Spartan* and *Trojan*, have been fitted up, as previously noted in the JOURNAL, and one is already on duty between Durban and Cape Town. Each has accommodations for 67 patients and 64 convalescents, each consists of an army medical officer, 2 civilian surgeons, 3 nursing sisters, 5 non-commissioned officers and 11 privates, R. A. M. C.

For transportation to England two steamers have been prepared. One, the *Midnight Sun*, newly christened the *Princess of Wales*, has been prepared for service by the Armstrong Company at Newcastle-on-Tyne. The staff will consist of 2 army medical officers, 2 civilian surgeons, 3 nursing sisters, 7 non-commissioned officers, 10 privates R. A. M. C., with 3 ambulance officers and 20 orderlies of the St. John's Ambulance Association. The other hospital ship, the *Maine*, has been chartered and is being fitted out as previously noted in the JOURNAL. The senior medical officer is to be Surgeon Lieut-Col. F. H. Hensman, late First Life Guards, but the other members of the medical staff, including surgeons, lady nurses and orderlies will be from the United States.

SANITATION.

All possible precautions will be taken to guard against an epidemic of typhoid fever. Filters have been provided, and it will be part of the duty of regimental medical officers to look after their efficiency; but whenever possible drinking water will be boiled, as it is now recognized that boiling is more efficient than any filter. Each regimental officer is the sanitary officer of his camp. He has been fitted for the position by his training at the Army Medical School at Netley. The principal medical officer on the staff of General Buller, commanding the forces, is Surgeon-General Nilson, who has with him an expert in bacteriologic and chemical investigations.

ROENTGEN RAY APPARATUS.

Ten sets have been sent out for general hospital and field use: In addition to these the *Princess of Wales* and *Maine* will each be provided with the latest and most approved patterns.

GENEVA CONVENTION.

The South African Republic accepted the terms of the Convention in January, 1897. Telegrams have been received announcing that the Boers have fired on the Red Cross flag. It will, however, prob-

ably be found that any such action has been on the part of irresponsible or ignorant persons.

NURSING STAFF.

The men of the R. A. M. C. are especially trained as nurses, dispensers, cooks, etc., but they are not equal to the other sex, and for some years past there has been an Army Nursing Service consisting of a woman superintendent, Miss H. Norman; about 20 superintendents and about 60 sisters, who serve at home and in the colonies, India being provided for by the Indian Nursing Service, which is a separate body. In South Africa there will be 4 superintendents and about 40 sisters, including those in the hospital ships. These numbers have been supplemented by 12 ladies taken from the Army Nursing Reserve, which consists of upward of 100 sisters possessing the requisite qualifications, under the management of a committee presided over by the Princess Christian. Applications to be accepted for nursing duty from all sorts and conditions of ladies are said to have been overwhelming; but only the regularly enrolled will be sent out.

CONSULTING SURGEONS.

Col. W. F. Stevenson of the medical corps, Sir William MacCormac, K.C.V.O., president of the Royal College of Surgeons; Mr. Frederick Treves, F.R.C.S., and Mr. G. Makins, F.R.C.S., have been appointed consulting surgeons, as previously mentioned in our news columns. This is not to be regarded as a confession of weakness as regards the dexterity of the army medical officers. There are many brilliant operators among them. Modern surgery is conservative. Many a limb is saved now which for the same injury would a few years ago have been amputated. Cases must occur, however, where the extent of the injury, etc., situation, and the actual condition of the wounded man make it no easy matter to decide whether resort should be had to operative interference.

REINFORCEMENTS.

Another division is being mobilized for service and will be accompanier by three bearer companies and three field hospitals.

NATAL FIELD FORCE.

Sir George White's troops in Ladysmith constitute another division. It has five field hospitals.

NUMERICAL RECAPITULATION.

The medical establishments in service when the whole force has arrived in Africa, excluding those usually present in Cape Colony in time of peace, will comprise 282 medical officers of the army; 68 civilian surgeons; 56 nursing sisters, including 4 superintendents; 28 quartermasters, 2056 of all other ranks, with 800 army service corps for transport.

ARMY CHANGES.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., from December 1 to 7, inclusive:

Roger T. Atkinson, acting asst.-surgeon, from Wakefield, Mass., to the Department of California.

Walter C. Chidester, acting asst.-surgeon, from Dayton, Ohio, to the Department of California.

Robert C. Eye, acting asst-surgeon, from Fort Terry, N. Y., to duty at Key West, Fla.

Meyer Herman, acting asst.-surgeon, from the Division of Cuba to New Orleans, La., for annulment of contract.

Henry Klersted, acting asst.-surgeon, from Philadelphia, Pa., to the Department of California.

George B. Laurason, acting asst.-surgeon, from Washington, D. C., to the Department of California.

Frank J. O'Hare, acting asst.-surgeon, from Fort Myer, Va., to the Department of California.

Henry I. Raymond, major and surgeon Vols., sick leave extended.

Frederick P. Reynolds, captain and asst.-surgeon, U.S.A., leave of absence granted.

Chandler P. Robbins, acting asst.-surgeon, from Louisville, Ky., to the Department of California.

Bat Smith, acting asst.-surgeon, from New York City to Washington, D. C., to report to the surgeon-general for instructions; leave of absence granted.

Henry R. Stiles, captain and asst.-surgeon, U.S.A., previous orders directing him to proceed from Benicia Barracks to San Francisco, Cal., revoked; he will proceed to Madison Barracks, N. Y.

Benjamin L. Ten Eyck, captain and asst.-suurgeon, U.S.A., sick leave extended.

Louis A. Thompson, acting asst.-surgeon, from Dayton, Ohio, to the Department of California.

Timothy E. Wilcox, major and surgeon, U.S.A., member of a board to examine officers for promotion convened in New York City.

Ezra Woodruff, major and surgeon, U.S.A., previous orders amended so as to direct him to proceed from Camp Meade, Pa., to Fort Hamilton, N. Y., via Fort Trumbull, Conn.

NAVY CHANGES.

Changes in the Medical Corps of the U. S. Navy for the week ended Dec. 9, 1899:

Medical Director D. Dickinson, promoted to medical director.

Medical Inspector G. E. H. Harmon, promoted to medical inspector.

P. A. Surgeon A. W. Dunbar, detached from the *Resolute*, when placed out of commission, and ordered home to await orders.

Asst.-Surgeon R. K. McClanahan, ordered to the Washington navy yard.

Asst.-Surgeon W. M. Garton, detached from the Washington navy yard and ordered to the *New York*.

MARINE-HOSPITAL CHANGES.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the U.S. Marine-Hospital Service for the 7 days ended Dec. 7, 1899:

Surgeon F. W. Mead, granted leave of absence for one day.

Surgeon G. M. Magruder, to proceed to New York City and report to Surgeon L. L. Williams (Immigration Depot) for special temporary duty; to proceed to London, England, for duty.

P. A. Surgeon T. B. Perry, relieved from duty at New York City, and directed to proceed to Baltimore, Md., for duty and assignment to quarters.

P. A. Surgeon C. P. Wertenbaker, to rejoin station at Wilmington, N. C.

P. A. Surgeon A. C. Smith, to proceed to New York City, and report to Surgeon L. L. Williams (Immigration Depot) for special temporary duty; to proceed to Hamburg, Germany, for duty.

P. A. Surgeon Rupert Blue, to proceed to Genoa, Italy, for duty.

P. A. Surgeon F. K. Sprague, to proceed to Antwerp, Belgium, for duty.

P. A. Surgeon J. B. Greene, relieved from duty at Boston, Mass., and directed to proceed to New York City, and report to Surgeon L. L. Williams (Immigration Depot) for special temporary duty.

Asst.-Surgeon S. R. Tabb, to proceed to Savannah Quarantine Station (Georgia) for temporary duty.

Asst.-Surgeon S. B. Grubb, to proceed to New York City and report to Surgeon L. L. Williams (Immigration Depot) for special temporary duty; to proceed to Havre, France for duty.

Asst.-Surgeon W. C. Hobdy, to report at Washington, D. C., for special temparory duty and then to rejoin station at New York City; relieved from duty at New York City (Stapleton) and directed to report to Surgeon L. L. Williams (Immigration Depot) for special temporary duty; to proceed to Southampton, England, for duty.

Asst.-Surgeon G. M. Corput, upon being relieved from duty at Baltimore, Md., to report at Washington, D. C., for special temporary duty; then to proceed to New York City, reporting to Surgeon L. L. Williams (Immigration Depot) for special temporary duty.

Asst.-Surgeon F. J. Thornbury, relieved from duty at San Francisco, Cal., and directed to proceed to the San Francisco Quarantine Station for duty.

Acting Asst.-Surgeon B. W. Goldsborough, granted leave of absence for two days.

HEALTH REPORTS.

The following cases of smallpox, yellow fever, cholera and plague, have been reported to the Surgeon-General of the U. S. Marine-Hospital Service, during the week ended Dec. 8, 1899:

SMALLPOX—UNITED STATES.

California: San Francisco, Nov. 23, 3 cases in 48th Regiment, U. S. Vols.
District of Columbia: Washington, Nov. 25 to Dec. 2, 2 cases.
Illinois: Dixon, Dec. 3, 125 cases.
Louisiana: New Orleans, Nov. 25 to Dec. 2, 2 cases; Shreveport, Nov. 25 to Dec. 2, 1 case.
Massachusetts: Chelsea, Nov. 25 to Dec. 2, 3 cases.
Michigan: Nov. 25, reported in 6 places.
New York: New York, Nov. 25 to Dec. 2. 2 cases.
Ohio: Cleveland, Nov. 17 to Dec. 2, 1 case.
Virginia: Portsmouth, Nov. 25 to Dec. 2, 3 cases, 1 death.

SMALLPOX—FOREIGN.

Belgium: Ghent, Nov. 4 to Nov. 18, 3 deaths.
Brazil: Rio de Janeiro, Oct. 22 to Nov. 3, 200 cases, 123 deaths.
England, London, Nov. 11 to Nov. 18, 1 case.
India: Bombay, Oct. 23 to Nov. 7, 7 deaths; Madras, Oct. 28 to Nov. 3, 1 death.
Mexico: Mexico, Nov. 12 to Nov. 19, 1 case, 1 death.
Russia: Moscow, Oct. 28 to Nov. 4, 1 case, 1 death; St. Petersburg, Nov. 4 to Nov. 11, 9 cases, 5 deaths; Warsaw, Nov. 4 to Nov. 11, 9 deaths.

YELLOW FEVER—UNITED STATES.

Louisiana: New Orleans, Nov. 25 to Dec. 2, 1 case.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, Oct. 23 to Nov. 4, 6 cases, 3 deaths.
Cuba: Havana, Nov. 22 to Nov. 29, 11 cases, 8 deaths; Santiago de Cuba, Nov. 15 to Nov. 22, 1 case.

CHOLERA.

India: Bombay, Oct. 23 to Nov. 7, 2 deaths; Calcutta, Oct. 1 to Oct. 21, 33 deaths.

PLAGUE.

Austria: Trieste, Nov. 4, 1 death, sailor on Ottoman liner *Polis Mytilini*.
India: Bombay, Oct. 23 to Nov. 7, 165 deaths; Calcutta, Oct. 1 to Oct. 21, 134 deaths; Kurrachee, Oct. 22 to Nov. 4, 3 cases, 6 deaths.
Paraguay: Asuncion, Oct. 7 to Oct. 24, 10 deaths.

CHANGE OF ADDRESS.

Anderson, M., from 513 15th St. to Chase Bldg, Moline, Ill.
Balduc, J. O., from 104 S. Hoyne Ave. to New Era Bldg, Chicago.
Bush, J. H., from Indianapolis, Ind. to Charleston, Ill.
Boswell, A. J., from 199 E. Lewis St. to Fairfield Ave, Fort Wayne, Ind.
Baccus, V., from 349 to 351 N. Clark St., Chicago.
Collard, L. R., from Austin to Junction City, Texas.
Clasen, H. W., from Littleport to Postville, Iowa.
Dwelle, E. H., from 2611 Calumet Ave. to Mercy Hosp., Chicago.
Dewey, C. R., from Berrien Springs to Keeler, Mich.
Elliott, H. R., from 1667 Downing to 42 W. Ellsworth St., Denver, Colo.
Fanning, G. J., from Philipsburg, Mont. to Warm Spring, Ore.
Farr, W. W., from 5800 Green to 1224 Walnut St., Philadelphia, Pa.
Gates, L. A., from Bridger, Mont. to Shannon, Ill.
Gable, W. F., from 1337 Courtland to 627½ N. High St., Columbus, Ohio
Gibbons, P. J., from 324 Warren St. to Snow Bldg, New York City.
Heinberger, D., from Leadville to 2204 Clarkson St., Denver, Col.
Hood, T. C., from Dana to Willoughby Bldg., Indianapolis, Ind.
Hall, F. J., from 395 Main St. to Linz Bldg, Dallas, Texas.
King, F. R., from Anita, Iowa to Keensburg, Ill.
Kingsbury, W. P., from Brooklyn to 203 East 19th St., New York City.
La Baume, Lydia, from Geneva to Rockford, Ill.
Lunn, W. B., from Baraga to Marquette, Mich.
McMeekin, R. J., from Saginaw to Akron, Mich.
Meloy, W. W., from 149 S. Paulina to 734 W. Monroe St., Chicago.
Morris, R. T., from 49 W. 39th to 58 W 56th St., New York City.
Prioleau, W. H., from New York City to Thomasville, Ga.
Prewitt, T. F., from 3101 Pine to 4615 Westminster Pl., St. Louis, Mo.
Rice, N. J., from Randolph to Council Bluffs, Iowa.
Richmond, W. B., from Mt. Pleasant, Mich. to Brazil, Ind.
Snyder, T., from Crystal Beach, Ont., to 1919 Main St., Niagara Falls, N. Y.
Xanten, F. A., from 366 Wabasha St. to 275 Lowry Arcade, St. Paul, Minn.